First Grade Mathematics

Instructional Focus Documents

Introduction:

The purpose of this document is to provide teachers a resource which contains:

- The Tennessee grade level mathematics standards
- Evidence of Learning Statements for each standard
- Instructional Focus Statements for each standard

Evidence of Learning Statements:

The evidence of learning statements are guidance to help teachers connect the Tennessee mathematics standards with evidence of learning that can be collected through classroom assessments to provide an indication of how students are tracking towards grade-level conceptual understanding of the Tennessee mathematics standards. These statements are divided into four levels. These four levels are designed to help connect classroom assessments with the performance levels of our state assessment. The four levels of the state assessment are as follows:

- Level 1: Performance at this level demonstrates that the student has a minimal understanding and has a nominal ability to apply the grade/course level knowledge and skills defined by the Tennessee academic standards.
- Level 2: Performance at this level demonstrates that the student is approaching understanding and has a partial ability to apply the grade/course level knowledge and skills defined by the Tennessee academic standards.
- Level 3: Performance at this level demonstrates that the student has a comprehensive understanding and thorough ability to apply the grade/course level knowledge and skills defined by the Tennessee academic standards.
- Levels 4-7: Performance at these levels demonstrates that the student has an extensive understanding and expert ability to apply the grade/course level knowledge and skills defined by the Tennessee academic standards.

The evidence of learning statements are categorized in this same way to provide examples of what a student who has a particular level of conceptual understanding of the Tennessee mathematics standards will most likely be able to do in a classroom setting. The provided evidence of learning statements are examples of what students will most likely be able to do and do not represent an exhaustive list. Additionally for Kindergarten, the standards that provide levels 4-7 are congruent with the scoring rubrics for the kindergarten portfolio. Standards that only provide 4 levels are not included in the portfolio scoring rubric.

Instructional Focus Statements:

Instructional focus statements provide guidance to clarify the types of instruction that will help a student progress along a continuum of learning. These statements are written to provide strong guidance around Tier I, on-grade level instruction. Thus, the instructional focus statements are written for level 3 and 4.

Operations and Algebraic Thinking (OA)

Standard 1.OA.A.1

Major Work of the Grade

Add and subtract within 20 to solve contextual problems, with unknowns in all positions, involving situations of *add to*, *take from*, *put together/take apart*, and *compare*. Use objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Table 1 - Addition and Subtraction Situations)

Evidence of Learning Statements

Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Adds and subtracts **within 10** to solve contextual problems, involving any of the problem types. Students may use concrete objects, mathematical drawings, diagrams or equations.	Adds and subtracts **within 20** to solve one-step contextual problems, using <u>two</u> different situations of *add to-change unknown, take-from-change unknown, put together/take apart-both addends unknown,* and *compare-difference unknown.* Represent these problems with a mathematical drawing, diagram, or equation with a symbol for the unknown number.	Adds and subtracts **within 20** to solve one-step contextual problems, using <u>four</u> different situations of *add to-change unknown, take-from-change unknown, put together/take apart-both addends unknown,* and *compare-difference unknown.* Represent these problems with a mathematical drawing, diagram, or equation with a symbol for the unknown number.	Adds and subtracts **within 20** to solve one-step contextual problems, using <u>six</u> different situations of *add to-change unknown, take-from-change unknown, put together/take apart-both addends unknown, compare-difference unknown, compare-bigger unknown (version with more),* and *compare-smaller unknown (version with fewer).* Represent these problems with a mathematical drawing, diagram, or equation with a symbol for the unknown number.	Adds and subtracts **within 20** to solve one-step contextual problems, using <u>one</u> of the situations of *add to-start unknown* or *take from-start* unknown Represent these problems with a mathematical drawing, diagram, or equation with a symbol for the unknown number	Adds and subtracts **within 20** to solve two-step contextual problems. Represent these problems with two equations that encompasses both steps needed to solve the problem. Given two, one-step equations arising from the different situations of *add to-change unknown, take-from-change unknown, put together/take apart-both addends unknown, compare-difference unknown, compare-bigger unknown (version with more),* and *compare-smaller unknown (version with fewer)*, create two unique contextual problems that could be solved using the provided equations.	Given a two-step equation involving both addition and subtraction, create a contextual problem that could be solved using the provided equation.

Instructional Focus Statements

Level 3:

Instruction should focus on building upon students' experiences with problem situations in kindergarten. Students added and subtracted within 10 in kindergarten with a variety of problem situations and should now extend their understanding by working within 20. It is important to note that many of the problem solving situations should be the same as what was experienced in kindergarten using larger numbers. In particular, compare type problems, start unknown and change unknown, will be new for grade 1 students. These are more complex than the other types introduced in kindergarten as students must think about a quantity that is not physically present and must conceptualize that amount. It is important to note that developing an understanding of each situation takes time and should not be rushed. Teachers must plan carefully the introductions of these problem types across the year to allow students time to draw and directly model the situation before eventually moving to writing equations. The table for common addition and subtraction situations is located on page 20 in the Tennessee mathematics standards located here.

With all problem situation types, opportunities should be provided for exploration with a variety of modeling strategies intertwined with a wide variety of contextual problems. This standard should be paired with 1.OA.C.5 as it is in this standard that students are working with strategies to add and subtract within 20. These strategies may involve counters, ten-frames, Rekenreks, linking cubes, etc. Additionally, students should represent their thinking through mathematical drawings and number lines. As students show understanding of the problem situations with models and drawings, they should begin to represent them with equations.

It is important to note that teaching key words does not help students to develop an understanding of these situations. Rather, by using concrete models and drawing pictures, students can relate their actions or relationships to whether the situation calls for addition and subtraction.

Levels 4-7:

As students deepen their understanding of problem solving situations, they should continue to experience varying situations with increasing rigor over time. Eventually, students should be challenged with two-step problems that arise from different types of situations some of which involve exclusively addition, some involving exclusively subtraction, and some a mixture of both. Students should continue to employ drawings, diagrams, and even use manipulatives alongside equations as they continue developing their understanding of problem solving situations.

Standard 1.OA.A.2 **Major Work of the Grade**						
Add three whole numbers whose sum is within 20 to solve contextual problems using objects, drawings, and equations with a symbol for the unknown number to represent the problem.						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Adds two whole numbers whose sum is **within 10** to solve contextual problems, using <u>two</u> different situations of *add to-result unknown,* and *put together/take apart-total unknown,* Represent these problems with a mathematical drawing, diagram, <u>or</u> equation with a symbol for the unknown number.	Adds two whole numbers whose sum is **within 20** (one addend must be greater than 10) to solve contextual problems, using <u>two</u> different situations of *add to-result unknown,* and *put together/take apart-total unknown,* Represent these problems with a mathematical drawing, diagram, <u>or</u> equation with a symbol for the unknown number.	Adds three whole numbers whose sum is **within 20** to solve contextual problems, using <u>two</u> different situations of *add to-result unknown,* and *put together/take apart-total unknown,* Represent these problems with a mathematical drawing or diagram, <u>and</u> an equation with a symbol for the unknown number.	Adds three whole numbers whose sum is **within 20** to solve contextual problems, using <u>four</u> different situations of *add to-result unknown, put together/take apart-total unknown, add to-change unknown,* and *put together/take apart-addend unknown.* Represent these problems with a mathematical drawing or diagram, <u>and</u> an equation with a symbol for the unknown number.	Adds three whole numbers whose sum is **within 20** to solve contextual problems using *add to-start unknown.* Represent these problems with a mathematical drawing or diagram, <u>and</u> an equation with a symbol for the unknown number.	Adds three whole numbers whose sum is **within 20** to solve a two-step contextual problem. Represent this problems with a mathematical drawing or diagram, <u>and</u> equations with a symbol for the unknown number. Given an equation involving addition of three whole numbers whose sum is within 20, create an *add to-start unknown* contextual problem that can be solved using the provided equation.	Adds three whole numbers whose sum is **within 20** to solve an *all addends unknown* contextual problem. Represent this problem with a mathematical drawing or diagram, <u>and</u> an equation. Given an equation involving addition of three whole numbers whose sum is within 20, create two different situations of contextual problem that can be solved using the provided equation.
Instructional Focus Statements						
Level 3: Instruction should focus on building upon students' experiences with problem situations in kindergarten. Students worked with conceptual problems where the sum of the numbers was within 10 in kindergarten with a variety of problem situations. They should now extend their understanding by working within 20 and working with three addends. It is important to note that many of the problem solving situations should be the same as what was experienced in kindergarten using larger numbers and using more numbers. It is important to note that developing an understanding of each situation takes time and should not be rushed. Teachers must plan carefully the introductions of these problem types across the year to allow students time to model the situation and then eventually move to writing equations. The table for common addition and subtraction situations is located on page 20 in the Tennessee mathematics standards located here.						

With all problem situation types, opportunities should be provided for exploration with a variety of modeling strategies intertwined with a wide variety of contextual problems. These strategies may involve counters, ten-frames, Rekenreks, linking cubes, etc. Additionally, students should represent their thinking through mathematical drawings and number lines. As students show understanding of the problem situations with models and drawings, they should begin to represent them with equations. Additionally, as properties of addition are introduced in 1.OA.B.3, these problems offer an ideal application of the properties of addition. Students should demonstrate an understanding that the order in which the numbers are combined does not affect the resulting sum. Students should flexibly think about the numbers they are combining and justify why they choose to combine them in a particular order. This critical thinking step will help build fluency with addition.

It is important to note that teaching key words does not help students to develop an understanding of these situations. Rather, by using concrete models and drawing pictures, students can relate their actions to whether the situation calls for addition and subtraction.

Levels 4-7:
As students deepen their understanding of problem solving situations, they should continue to experience varying situations with increasing rigor over time. Students should continue to employ drawings, diagrams, and even use manipulatives alongside equations as they continue developing their understanding of problem solving situations. Eventually, students should be challenged to create their own contextual problems based on a provided equation.

Standard 1.OA.B.3 Major Work of the Grade						
Apply properties of operations (additive identity, commutative, and associative) as strategies to add and subtract. (Students need not use formal terms for these properties.)						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Applies **one** of the properties of operations (additive identity, commutative, or associative) as a strategy to add within 10 using mathematical tools or representations. (Students need not use formal terms for these properties).	Applies **two** of the properties of operations (additive identity, commutative, or associative) as strategies to add within 20 using mathematical tools or representations. (Students need not use formal terms for these properties).	Applies the **three** properties of operations (additive identity, commutative, <u>and</u> associative) as strategies to add within 20. (Students need not use formal terms for these properties). Mathematical tools and/or representations may be used. Demonstrates an understanding that these three properties do not apply to the operation of subtraction.	Applies properties of operations (additive identity, commutative, <u>and</u> associative) as strategies to add within 20. (Students need not use formal terms for these properties). Students should explain or defend the accuracy of their answer and the property used. Mathematical tools and/or representations may be used. Demonstrates an understanding that these properties do not apply to the operation of subtraction and provide examples and an explanation as to why.	Applies properties of operations (additive identity, commutative, <u>and</u> associative) as strategies to **mentally** add within 20. (Students need not use formal terms for these properties.) Students should explain or defend the accuracy of their answer.	Explain in either verbal or written form (without using the formal terms for the properties) when one property (commutative, associative, <u>or</u> additive identity) is useful as a strategy for addition and provide an example to justify their thinking.	Explain in either verbal or written form (without using the formal terms for the properties) when each property (commutative, associative, <u>and</u> additive identity) is useful as a strategy for addition and provide an example to justify their thinking. Explain in either verbal or written form (without using the formal terms for the property) why the associative property is not useful as a strategy for subtraction and provide an example to justify their thinking.
Instructional Focus Statements						
Level 3: Instruction for this standard should focus on having students explore different ways to combine numbers looking for and making use of structure (MP 7) and employing repeated reasoning (MP 8) in order to develop an understanding of the additive identity, commutative property of addition, and associative property of addition. It is important to reiterate that students should not learn the formal names for the properties at this grade level. The intent is for students to flexibly think about how to combine numbers when they are adding. Through discovery, they learn that the order two numbers						

are added doesn't affect the sum and that with three addends where they begin the addition process doesn't affect the sum either. The end result is new strategies students can use when they are working with addition.

To address subtraction, it is equally important for students to realize that the commutative property does not hold true. As students have no understanding of negative numbers, the conversation should be phrased in such a way that students realize that, for example, when they have 10 items and take away 6, 4 items remain. However, if they have 6 items and remove 10 items, there are not enough items and more are being removed than the original amount. Thus 10 – 6 and 6 – 10 cannot be equal. It is important not to mislead students by telling them that they cannot subtract 10 from 6 as they will when they work with positive and negative numbers in middle school. The conceptual understanding is simply that 10 – 6 and 6 – 10 are not equal.

While the standard does not exclusively call out the identity property for subtraction, it is a nice extension from the identity property of addition for students to realize just like adding 0 to any number yields that number, subtracting 0 from any amount equals the start number as well.

As to the associative property, in grade 1 students are exclusively adding when working with more than two numbers. Subtraction presents many conceptual challenges when there are more than 2 numbers involved, a requirement to employ the associative property. To help students see why in grade 1 they will be only using the associative property with addition, consider using the following example: 7 + 6 – 8. Students at this grade could work out (7 + 6) – 8. However, they do not understand how to simplify 7 + (6 – 8) as their current understanding is that if you have 6 objects you cannot remove 8. This makes it conceptually impossible for them to apply the associative property here. The messaging for student is not that you cannot use the associative property when subtraction is involved simply that they will learn how that works in subsequent grades.

Levels 4-7:
As students deepen their understanding of how the properties work, instruction should shift to help students develop an understanding of when applying these ideas is helpful. Students should be able to justify when they might use a property based strategy and why that particular strategy is helpful in that case. They should be able to create examples and construct a viable argument (MP 3) to justify their thinking.

Standard 1.OA.C.5 Major Work of the Grade						
Add and subtract within 20 using strategies such as counting on, counting back, making 10, using fact families and related known facts, and composing/ decomposing numbers with an emphasis on making ten (e.g., 13 - 4 = 13 - 3 - 1 = 10 - 1 = 9 or adding 6 + 7 by creating the known equivalent 6 + 4 + 3 = 10 + 3 = 13).						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Add within 10 using **one** of the strategies of counting on or making 10 using concrete objects or drawings. Multiple problems may be used to show the strategies listed. Subtract with 10 using the strategy of counting back using concrete objects or drawings. Multiple problems may be used to show the strategies listed.	Add within 20 using **two** of the strategies: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings. Subtract with 20 using **one** of the following strategies: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings.	Add within 20 using **three** of the strategies: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings. Subtract with 20 using **two** of the following strategies: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings.	Add within 20 using **all** of the strategies: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings. Subtract with 20 using **all** of the following strategies: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings.	Add within 20 using **all** of the strategies: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings. Defend the solution and explain the strategies with words and/or drawings. Subtract with 20 using **all** of the following strategies: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten. Students may use concrete objects or drawings. Defend the solution and explain the strategies with words and/or drawings.	Choose 2 of the 4 strategies for addition: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten, create an expression or equation demonstrating when the strategy could be used and explain in either verbal or written form the mathematical benefits gained from using each strategy. Choose 1 of the 3 strategies for subtraction: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten, create an expression or equation demonstrating when the strategy could be used	For all 4 of the strategies for addition: counting on, making 10, using fact families (related known facts), and composting/decomposing numbers with an emphasis on making ten, create an expression or equation demonstrating when the strategy could be used and explain in either verbal or written form the mathematical benefits gained from using each strategy. For all 3 of the strategies for subtraction: counting back, using fact families (related known facts), and composing/decomposing numbers with an emphasis on making ten, create an expression or equation demonstrating when the strategy could be used and explain in either verbal or written form

					and explain in either verbal or written form the mathematical benefits gained from using each strategy.	the mathematical benefits gained from using each strategy.

Instructional Focus Statements

Level 3:

The operations of addition and subtraction build on the flexibility in thinking students have gained from composing and decomposing numbers in various ways as they developed an understanding of counting and cardinality. There is a progression that has been determined to help students as they develop a conceptual understanding of any operation. This progression is composed of three stages of learning: concrete, representational, and abstract. Instruction within grade 1 for this standard should focus on representational learning through invented strategies.

Invented strategies are when students begin eliciting their understanding of composing and decomposing numbers in flexible ways in order to more quickly figure out a computation. Some examples of invented strategies are compensation, counting on, counting back, making a ten, and using fact families. It is important to note that for many students, these strategies are easier, more intuitive, and quicker than the standard algorithm that is not introduced until grade 3. Additionally, they are more efficient than direct modeling where students physically manipulate objects or creating drawings to solve math problems. The vast majority of the invented strategies are helping students develop an understanding of how and why making a ten is helpful. It is important that students are led to discover these relationships as opposed to being told the relationship. Ultimately, invented strategies play a crucial role in the development of a student's fluency in both addition and subtraction.

Thus, instruction should focus on helping students discover more efficient ways to combine and break apart numbers. For example, when adding 8 + 7, a student may have discovered when using direct modeling with ten frames the importance of filling a ten frame to make 10. In the invented strategy stage, they now can build upon that experience to realize without a physical ten frame that 7 can be decomposed into 2 and 5 which provides the 2 needing to be added to the 8 to make a ten. Thus this gives a 10 and a 5 to be combined to get 15. This flexibility in thinking is what builds fluency for students.

Levels 4-7:

Once students demonstrate an understanding of multiple strategies for both addition and subtraction, they should be challenged to construct a viable argument (MP 3) to defend their choice of strategy when solving a particular problem. Additionally, students should be able to critique the reasoning of others (MP 3) as classmates present their choice of strategy. It is also important that students are able to see and explain the mathematical connections that exist between various strategies. Ultimately, when presented a strategy students should be able to create a problem that could be solved by the given strategy and construct a viable argument (MP 3) to defend and explain their example.

Standard 1.OA.D.8 Major Work of the Grade						
Determine the unknown whole number in an addition or subtraction equation, with the unknown in any position (e.g., 8 + ? = 11, 5 = ? - 3, 6 + 6 = ?).						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Determine the whole number answer in addition and subtraction "total unknown" equations within 10.	Determine the whole number answer in addition and subtraction "total unknown" equations within 20. Determine the whole number answer in addition and subtraction "change unknown" equations within 10.	Determine the whole number answer in addition and subtraction "change unknown" equations within 10. Determine the whole number answer in addition and subtraction "start unknown" equations within 10.	Determine the whole number answer in addition and subtraction "start unknown" equations within 20.	Determine the unknown whole number in an addition AND subtraction equation within 20 and includes two expressions that are equivalent. (e.g. 7 + 4 = ? + 8 or 10 – 6 = 9 - ?)	Determine the unknown whole number in an equation with an addition expression on one side of the equal sign and a subtraction expression on the other side of the equal sign (e.g. 7 + 4 = 15 - ?).	Given an equation with an addition expression on one side of the equal sign and a subtraction expression on the other side of the equal sign where both the addition and subtraction expressions have an unknown value, generate a list of 5 possible values for the unknowns that would keep the value of both expressions within 20. (e.g. ? + 3 = ? -5 and the student generates 5 possible solutions)

Instructional Focus Statements

Level 3:

In grade 1, students are developing a conceptual understanding of the operations of addition and subtraction by employing direct modeling and using student-invented strategies. They should integrate this standard when working with both simplifying expressions (1.OA.C.5) and making sense of and solving a wide variety of contextual problems (1.OA.A.1).

Standard 1.OA.D.8 is explicitly transitioning students so that they begin developing an understanding of the symbolic representations of addition and subtraction using equations. That said, this standard is not meant to be taught in isolation. As students reach a point where they are ready to express their thoughts in equation form when working with contextual problems or student invented strategies, they should be encouraged to do so. It is important to note that students should be provided an opportunity to work both with equations that are not related to contextual problems and with equations that are generated from contextual problems equally. With both types, they should initially be modeling the solution with manipulatives or drawings. Part-part-whole maps are particularly helpful as students conceptualize equations.

Additionally, this standard pairs very nicely with 1.OA.D.7. Standard 1.OA.D.8 supports students as they solidify their understanding of the equal sign and solidify their understanding of what equality means. This concept should not be glossed over as this understanding is foundational to all future mathematics courses.

One other note, as students transition to writing equations as a way to represent and eventually solve contextual problems, symbolic representation may be challenging as it requires more abstract thinking patterns. It is important to ask students to explain their reasoning at every step of the way from writing the equation to solving it. Be sure that students are experiencing solving equations (both with and without a context) with the unknown in all positions.

Levels 4-7:

As students solidify their understanding of solving addition and subtraction equations with the unknown in all positions, they should be challenged to think through equations that require working with more than one operation. Students can be challenged to make sense of problems (MP 1) and reason quantitatively (MP 2) in order to solve more complex equations. For example, when solving the equation 10 + 2 = 8 + _____ students may decompose 10 and look at the equation as 8 + 2 + 2 = 8 + _____ then 8 + 4 = 8 + _____ and determine that a 4 must be placed in the blank in order for the two sides to be equal. Students should be given the opportunity to justify their thinking and explain how they worked a particular problem. This type of flexible thinking will help build fluency and be invaluable to students in future mathematics work.

Numbers and Operations in Base Ten (NBT)

Standard 1.NBT.A.1

Major Work of the Grade

Count to 120, starting at any number. Read and write numerals to 120 and represent a number of objects with a written numeral. Count backward from 20.

Evidence of Learning Statements

Students with a level 1 understanding of this standard will most likely be able to:	Students with a level 2 understanding of this standard will most likely be able to:	Students with a level 3 understanding of this standard will most likely be able to:	Students with a level 4 understanding of this standard will most likely be able to:	Students with a level 5 understanding of this standard will most likely be able to:	Students with a level 6 understanding of this standard will most likely be able to:	Students with a level 7 understanding of this standard will most likely be able to:
Student can accurately complete at least one of the following tasks: Counts to **100**, by ones Reads and writes numerals to **20** Represents a number of objects (within 20) with a written numeral Counts backward from **10**.	Student can accurately complete at least two of the following tasks: Counts to **100**, starting at any number by ones. Reads and writes numerals to **100** Represents a number of objects (within 100) with a written numeral Counts backward from **20**.	Counts to **120**, starting at any number by ones. Reads and writes numerals to **120.** Represents a number of objects (within 120) with a written numeral. Counts backward from **20** by 1's.	Counts to **120** by ones, twos, and tens, starting at any number Identifies a missing number in a given counting sequence when counting by ones. Counts backward from **20** by 1's and 5's.	Counts to **120** by ones, twos, fives, and tens starting at any number Counts to **120** by tens and twenties, starting at any number Identifies a missing number in a given counting sequence when counting by 1's, 2's, 5's and 10's. Counts backward from **20** by 1's, 2's and 5's.	Counts to **120** by ones, twos, threes, fours, fives, and tens starting at any number Counts to 120 by both tens and twenties starting at any number and mathematically explain the relationship between the two patterns. Identifies a missing number in a given counting sequence when counting by 1's, 2's, 3's, 4's, 5's, 6's, and 10's and the student provides the rule for the pattern.	Counts to 120 by any number increment between 1 and 10 starting with any number. Counts to 120 by both tens and twenties, threes and sixes, and fours and eights starting at zero. Mathematically explain and generalize the relationship that exists between all 3 pairs. Identifies a missing number in a given counting sequence when counting by any increment between 2 and 10 and the student provides the rule for the pattern. Count backward from any number between 10 and 20 by 1's, 2's, and 5's.

Instructional Focus Statements

Level 3:

Not only are the other standards in the Numbers and Operations in Base Ten (NBT) domain heavily reliant on students first knowing number names and counting sequences, the Operations and Algebraic Thinking (OA) domain standards are also dependent upon students ability to count and recognize and read printed numerals. The instructional focus for this standard should be building upon the counting and cardinality standards from kindergarten in order to solidify oral numeric fluency, recognition of printed numerals, reading of printed numerals, and a student's ability to connect the three. Additionally, students should be able to represent the number of objects in a group with a printed numeral. This will require students to have a conceptual understanding of one-to-one correspondence, cardinality, and rote counting in order for them to determine what number to write.

Instruction should be designed so that students discover the patterns that exist in spoken words, in the written numerals, and also the relationship that exists between the two. It is important to note that the number words continue to require attention in grade 1. As in kindergarten, teen numbers, in general, may continue to be particularly difficult for students as the words for teen numbers do not make their base-ten meanings evident. For example, "eleven" and "twelve" do not sound like "ten and one" and "ten and two" while "thirteen, fourteen, fifteen, . . . , nineteen" reverse the order of the ones and tens digits by saying the ones digit first. Further, from 20 to 100 the wording changes so that the tens are provided first. Also, these decade words (twenty, thirty, forty, etc.) sound similar to the teen numbers. For example, "fourteen" and "forty" sound a lot alike further providing possible road blocks for students as they work to understand the naming conventions alongside the meanings of our number system. It is also important to note that children frequently make counting errors such as "twenty-nine, twenty-ten, twenty-eleven, twenty-twelve." Additionally, watch carefully for students who struggle to differentiate between printed numerals like 12 and 21. While place value is not a focus for this standard, it is important to note when a student is struggling here. Students should be provided the opportunity to directly model each number with a manipulative such as linking cubes in order to reinforce that the placement of digits within a printed numeral matters.

When counting backwards, students may skip numbers. Additionally, they may struggle with the teen numbers for the same reasons they struggle with them when counting forwards.

The goal for this standard is for students to fluently count forwards, fluently count backwards, read numerals, and write numerals by the end of the grade. These skills should develop over time due to the readiness of the student. It is also important to note that it is not necessary for a student to completely master one prior to beginning to work with another.

Levels 4-7:

Once students have mastered oral fluency for 1's, they should be encourage to skip-count using a variety of patterns. While skip-counting is not exclusively called out within the grade 1 standards (it is for kindergarten and grade 2), its conceptual understanding will be invaluable to students when they employee repeated addition as a strategy for multiplication in subsequent grades. Additionally, students can be challenged to look for and make use of structure (MP 7) and look for and express regularity in repeated reasoning (MP 8) as they look at and discover patterns that exist within and between sequences generated by skip-counting.

Students should also be challenged to identify missing numbers within a counting sequence. This gives them the opportunity to more flexibly think about the progression of numbers within the number system.

Standard 1.NBT.B.2
Major Work of the Grade

Know that the digits of a two-digit number represent groups of tens and ones (e.g., 39 can be represented as 39 ones, 2 tens and 19 ones, or 3 tens and 9 ones).

Evidence of Learning Statements

Students with a level 1 understanding of this standard will most likely be able to:	Students with a level 2 understanding of this standard will most likely be able to:	Students with a level 3 understanding of this standard will most likely be able to:	Students with a level 4 understanding of this standard will most likely be able to:	Students with a level 5 understanding of this standard will most likely be able to:	Students with a level 6 understanding of this standard will most likely be able to:	Students with a level 7 understanding of this standard will most likely be able to:
Represent a number less than 20 as a ten with some ones. Represent a number less than 20 as a collection of ones.	Represent a two-digit number in **one** of the following ways: A single ten with a collection of ones or multiple tens with a collection of ones. (e.g., 39 can be represented as 1 ten and 29 ones, 2 tens and 19 ones, or 3 tens and 9 ones)	Represent a two-digit number as groups of tens and ones in **three** different ways. (e.g., 39 can be represented as 39 ones, 1 ten and 29 ones, 2 tens and 19 ones, or 3 tens and 9 ones)	Represent a two-digit number, larger than 50, as groups of tens and ones in **all** possible ways.	Represent a two-digit number, larger than 50, as groups of tens and ones in **all** possible ways and justify that all representations have been given.	Represent a two-digit number, larger than 50, as groups of tens and ones in **all** possible ways and justify that all representations have been given without the use of manipulatives.	Explain how to systematically list all of the different ways to break down a two-digit number into groups of 10's and 1's to guarantee that all possible ways have been generated and provide an explanation as to why the system works.

Instructional Focus Statements

Level 3:

Students are building upon the understanding developed in kindergarten where students composed and decomposed teen numbers into ten ones and some more ones. It is not inherently part of the kindergarten standard for students to name the ten ones a "ten". Thus, Grade1 instruction must explicitly focus in a way so that students make the connection that a "ten" is comprised of a bundle of ten ones. Also, attention should be given to the decade words "twenty", "thirty", "forty", etc. so that students connect the words to their representation of 2 tens, 3 tens, 4 tens, etc. The connection between how numbers are verbally said and their printed form is crucial as students engaged with developing an understanding of decomposing two-digit numbers into groups of tens and ones.

When students first interact with this standard, it is crucial that they build their conceptual understanding through direct modeling. Cubes or base ten blocks are both ideal manipulatives to provide students. Ten frames and Rekenreks may also be very helpful tools as students build conceptual understanding. Students should be given the opportunity through modeling (MP 4) to discover that in all instances where the two-digit number is greater than 20 there are multiple ways to decompose two digit numbers utilizing tens and ones.

Through the course of instruction, students should be reasoning quantitatively (MP1), modeling with math (MP 4), and looking for and making use of structure (MP 7).

Ultimately, the understanding that accompanies this standard will provide a crucial foundation as students develop an understanding of place value. Additionally, the ability to see the decomposition in multiple ways will aid students when they begin using strategies with addition and subtraction.

Levels 4-7:
Instruction at these levels should focus on helping students through repeated reasoning (MP 8) find ways to systematically produce all combinations of tens and ones for a two-digit number. This can be accomplished through direct modeling which will support students as they develop their iterative thinking process. Further, students should be able to verbalize in either spoken or written form their process and how they know that all combinations have been generated.

Standard 1.NBT.B.3
Major Work of the Grade

Compare two two-digit numbers based on the meanings of the digits in each place and use the symbols >, =, and < to show the relationship.

Evidence of Learning Statements

Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Accurately compares **two** one-digit numbers by verbalizing the comparison with comparative language including greater than, more than, less than, fewer than, equal to, or same as. (ex. Seven is more than five.)	Accurately compares **two** two-digit numbers based on the meanings of the digits in each place by verbalizing the comparison with comparative language including greater than, more than, less than, fewer than, equal to, or same as.	Accurately compares **two** two-digit numbers based on the meanings of the digits in each place **and** uses the symbols >, =, and < to show the relationship.	Accurately compares **two** two-digit numbers based on the meanings of the digits in each place **and** uses the symbols >, =, and < to show the relationship and Justifies the comparison (oral or written) by reasoning about meaning of the digits. For example, 58 is more than 48 because 58 has 5 tens and 8 ones while 48 has 4 tens and 8 ones. Or, 56 is less than 59 because they both have 5 tens but 6 ones in 56 is less than 9 ones in 59.	Accurately orders a set of **five** two-digit numbers from least to greatest or greatest to least based on the meanings of the digits in each place and uses the symbols > or < to show the relationships. The student provides justification for the comparison (oral or written) by explaining the reasoning used.	Accurately compares **two** addition and/or subtraction expressions (values are less than 100) based on the meanings of the digits from the resulting sum or difference or the relationship that exists between the magnitude of the numbers and the operation; correctly uses the symbols >, =, and < to show the relationship; and provides justification for the comparison (oral or written) by explaining the reasoning used. (e.g. 37 + 12 > 37 + 10 because 49 > 47 or 37 + 12 is greater because 12 is a greater number than 10 and both are being added to the same quantity. 33 + 24 < 45 + 39 because 57 < 84 or 33 is less than 45 and 24 is less than 39 so the sum of 33 + 24 will be less than the sum of 45 + 39).	Accurately orders **five** addition and subtraction expressions (values are less than 100) based on their value from either least to greatest or greatest to least, correctly uses the symbols > and < to show the relationship, and provides justification for the comparisons (oral or written) by explaining the reasoning used.

Instructional Focus Statements

Level 3:
In kindergarten, students developed an understanding of the concepts of greater than, less than, and equal to (K.CC.C.6) and then compared two written numerals up to 10 using the mathematical terminology greater than, less than, and equal to (K.CC.C.7). Instruction in grade 1 should focus in such a way that after developing a conceptual understanding students are ultimately comparing numbers based on the place value meaning of the digits within the number. It is crucial that students develop a conceptual understanding around comparison as opposed to trying to memorize and employ a set of procedures.

That said, students need the opportunity to engage with concrete and pictorial representations prior to using printed numerals and prior to utilizing the place value of the numbers in order to compare them. As students are developing their understanding, they should interact with tools such as ten-frames, base ten blocks, and hundreds charts. Once students have grasped comparing numbers by using manipulatives, they can move to thinking about the value of each digit. Students should be able to generalize that the digit in the tens place is more important for determining which two-digit number has a greater value. It is important that understanding and vocabulary both be developed/reinforced prior to the use of symbolic language.

Correctly placing the < or > symbol is a challenge for early learners. Accuracy can improve if students think of putting the wide part of the symbol next to the larger number. Through questioning, it can be determined if students are making mistakes due to a lack of understanding of place value and comparing numbers or a lack of understanding around how to correctly use the inequality symbol. Students should be encouraged to explain and defend their thinking throughout instruction (MP 3).

Levels 4-7:
Once a student has a strong understanding of comparing two numbers using place value and can explain their reasoning in either verbal or written form, they should be challenged to order a set of more than two numbers providing justification for how and why they arranged the numbers within the set in a particular way. Further, students can be challenged with problems very intentionally developed to illicit their ability to reason abstractly and quantitatively with numbers. One such example provided above is comparing 37 + 10 and 37 + 12. This pairing is very intentional as the student does not have to know how to add the numbers in order to answer the question. Instead they should be considering the relationships that exist between the numbers in the two provided expressions. Students should be challenged to make sense of the problem (MP 1), reason quantitatively (MP 2), and construct a viable argument (MP 3) to accompany their answer.

Standard 1.NBT.C.4 Major Work of the Grade						
Add a two-digit number to a one-digit number and a two-digit number to a multiple of ten (within 100). Use concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Accurately adds two one-digit numbers using concrete models or drawings. Accurately adds 10 to a single digit number using concrete models or drawings	Accurately adds a two-digit number to a one-digit number where composing a ten is not required (i.e. 12 + 6) using concrete models, drawings, strategies based on place value, properties of operations, or the relationship between addition and subtraction. Accurately adds a multiple of 10 and 10 within 100 using concrete models, drawings, strategies based on place value, properties of operations, or the relationship between addition and subtraction.	Accurately adds a two-digit number to a one-digit number (within 100) where composing a ten is required (i.e. 39 + 4) using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used. Accurately adds a two-digit number to a multiple of ten (within 100) using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to explain the reasoning used.	Accurately adds a two-digit number to a one-digit number (within 100) where composing a ten is required (i.e. 39 + 4) using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and explain how the **strategy** was used and beneficial in solving the problem. Accurately adds a two-digit number to a multiple of ten (within 100) using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and explain how the **strategy** was used and beneficial in solving the problem.	Accurately adds a two-digit number to a one-digit number (within 100) where composing a ten is required (i.e. 39 + 4) using two different strategies and explains the similarities and differences between the two strategies. Accurately adds a two-digit number to a multiple of ten (within 100) using two different strategies and explains the similarities and differences between the two strategies.	Accurately adds a two-digit number to a one-digit number (within 100) where composing a ten is required (i.e. 39 + 4) using two different strategies, explains the similarities and differences between the two strategies, and provides mathematical justification on how both strategies are correct as well as a description or example showing when each strategy is the most useful. Accurately adds a two-digit number to a multiple of ten (within 100) using two different strategies, explains the similarities and differences between the two strategies, and provides mathematical justification on how both strategies are correct as well as a description or example showing when each strategy is the most useful.	Given a problem containing the sum of a two-digit number and a one-digit number (within 100) where composing a ten is required (i.e. 39 + 4) that has been worked out with all work shown and contains an error that is the result of a common misunderstanding, find the mistake, correct the mistake, and explain the mathematical misunderstanding that would have caused the mistake to occur. Given a problem containing the sum of a two-digit number and a multiple of ten (within 100) that has been worked out with all work shown and contains an error that is the result of a common misunderstanding, find the mistake, correct the mistake, and explain the mathematical misunderstanding that

						would have caused the mistake to occur.

Instructional Focus Statements

Level 3:
Addition is a child's first experience with a mathematical operation. It is building on the flexibility students have gained from composing and decomposing numbers in various ways as they developed an understanding of counting and cardinality. There is a progression that has been determined to help students as they develop a conceptual understanding of any operation. This progression is composed of three stages of learning: concrete, representational, and abstract. Instruction within grade 1 should exclusively focus on concrete and representational learning.

In the concrete learning stage, instruction should focus on direct modeling. Students should be physically manipulating objects or creating drawings to solve math problems. The initial focus for this standard should be on having students use direst modeling techniques to add a two digit number and a one digit number. At this stage, regrouping is not the focus. For example, if a student is adding 26 and 9 using direct modeling, they could count out or draw twenty-six objects, count out or draw nine objects, combine them into one group, and then count by ones to see that there are 35 objects. Ten frames and hundreds charts are also very helpful for students in the direct modeling stage as they give students a systematic way to look at combining the values of two numbers and may prompt students to begin thinking about more efficient ways to combine numbers. The focus of direct modeling is on solidifying the understanding of the operation of addition as combining the two sets not trying to introduce and develop the concept of regrouping and making a ten. Students will directly model the sum of a two digit number and a multiple of ten the same way. Encourage students to look for patterns in their answers when they are adding multiples of ten as this will also cause them to think about more efficient ways of combining the numbers. It is important to note that direct modeling is a necessary developmental phase which allows children who are not ready for more efficient methods a way to explore the same problems as classmates who have progressed beyond this stage.

As students solidify their understanding of the operation of addition through direct modeling, as mentioned above, they will begin to look for more efficient ways to combine numbers. At this point, students are ready for working with representational modeling. Students will begin developing their own "invented strategies". Invented strategies are when students begin eliciting their understanding of composing and decomposing numbers in flexible ways in order to more quickly figure out a computation. Some examples of invented strategies are compensation, counting on, counting back, or making a ten. It is important to note that for many students, these strategies are easier, more intuitive, and quicker than the standard algorithm that is not introduced until grade 3. Additionally, they play a crucial role in the development of a student's fluency in addition. The vast majority of the invented strategies are helping students develop an understanding of how and why making a ten is helpful. It is important that students are led to discover this relationship as opposed to being told the relationship. Additionally, the importance of "ten" can be reinforced when students are adding a two-digit number and a multiple of ten.

One important note about base ten blocks: Base ten blocks are very helpful in helping model ten's and one's for students who have developed the conceptual understanding that the rod representing a ten is comprised of 10 ones. The drawback is that the ten rod cannot be separated into its ten individual pieces. For young learners who are just developing an understanding of the base ten number system, base ten blocks may inhibit their conceptual understanding of both addition and subtraction. Another alternative would be to use linking cubes or straw bundles that can be built into ten and then separated back into ones.

With this standard, students are not expected to interact with problems embedded in a context. Additionally, the orientation of the problem (horizontal or vertical) is not the focus. Students should see problems expressed both ways.

Levels 4-7:
Once students have developed fluency with invented strategies, it is important that they be challenge to make connections between the various strategies, explain those connections, and provide viable arguments (MP 3) for when certain strategies are the most efficient for solving problems. Ultimately a students with deep conceptual understanding of this standard has the capability of looking at someone else’s work, determining the strategy used, explaining the strategy used, determining if the problem is correct or incorrect, explaining why, and providing a critique of the reasoning used to solve the problem (MP 3).

Standard 1.NBT.C.6 Major Work of the Grade						
Subtract multiples of 10 from multiples of 10 in the range 10-90 using concrete models, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.						
Evidence of Learning Statements						
Students with a level 1 understanding of this standard will most likely be able to:	**Students with a level 2 understanding of this standard will most likely be able to:**	**Students with a level 3 understanding of this standard will most likely be able to:**	**Students with a level 4 understanding of this standard will most likely be able to:**	**Students with a level 5 understanding of this standard will most likely be able to:**	**Students with a level 6 understanding of this standard will most likely be able to:**	**Students with a level 7 understanding of this standard will most likely be able to:**
Accurately subtracts 1 from a number less than 10 using concrete objects or drawings.	Accurately subtracts 10 from multiples of 10 in the range of 10-90 using concrete objects or drawings.	Accurately subtracts multiples of 10 from multiples of 10 in the range of 10-90 using concrete objects, drawings, strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	Accurately and mentally subtracts multiples of 10 from multiples of 10 in the range of 10-90 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and verbally explains the strategy used.	Accurately and mentally subtracts multiples of 10 from multiples of 10 in the range of 10-90 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction and verbally explains the strategy used. Additionally, the student can describe patterns or generalizations and provide mathematical justifications for the pattern or generalization that can be used to solve these problems mentally.	Identify all of the multiples of 10 that can be subtracted from a given multiple of 10 and mentally provide all of the resulting differences (i.e. when given 70 the student identifies that they can subtract 70, 60, 50, 40, 30, 20, and 10 and then the student can accurately, mentally, perform all of those calculations).	Identify all of the multiples of 10 that can be subtracted from a given multiple of 10 and mentally provide all of the resulting differences (i.e. when given 70 the student identifies that they can subtract 70, 60, 50, 40, 30, 20, and 10 and then the student can accurately, mentally, perform all of those calculations) and verbally describes the strategy used to calculate the differences Describes the patterns or generalizations that could be used to generate this list for any multiple of 10 less than 90.

Instructional Focus Statements

Level 3:

As with addition, the progression of learning for subtraction should move through the same three stages of learning: concrete, representational, and abstract. Instruction within grade 1 with subtraction should also exclusively focus on concrete and representational learning.

In the concrete learning stage, students should be directly modeling by physically manipulating objects or creating drawings to solve math problems. Direct modeling will look like students counting out a quantity of objects and then removing objects from the set one object at a time. Students may not intuitively remove whole groups of ten when they begin working with this standard. Tools that may be very helpful to help students thinking progress in a way where they see the benefit of removing groups of 10 at a time are linking cubes, hundreds charts, ten frames, or really any system where students can build a ten from ones (i.e. filling cups with 10 beans). It is important to note that direct modeling is a necessary developmental phase which allows children who are not ready for more efficient methods a way to explore the same problems as classmates who have progressed beyond this stage.

One important note about base ten blocks: Base ten blocks are very helpful in helping model ten's and 1's for students who have developed the conceptual understanding that the rod representing a ten is comprised of 10 ones. The drawback is that the ten rod cannot be separated into its ten individual pieces. For young learners who are just developing an understanding of the base ten number system, base ten blocks may inhibit their conceptual understanding of both addition and subtraction. Another alternative would be to use linking cubes, straw bundles, or really anything that can be built into tens and then separated back into ones.

As students solidify their understanding of the operation of subtraction through direct modeling, they will begin to look for more efficient ways to subtract numbers. At this point, students are ready for working with representational modeling. When subtracting ten, students will shift from removing 1object from the group at a time to removing groups of 10 and understanding why that is a more efficient way to calculate the difference. This understanding will be crucial for students in grade 2 when they begin working with subtraction problems requiring decomposition as many strategies for subtraction are based on creating more friendly numbers. Additionally, one mathematical learning goal for this standard is for students to connect that subtracting ten from a multiple of ten does not change the value in the ones place and for the student to be able to explain why. This very often gets lost as students are not working with any ones. That said, this understanding still needs to be built for students.

It is also important that students realize the connection that exists between subtraction and addition. One way they should look at 80 -70 as an unknown addend addition problem, 70+ ___ = 80, and reason that 1 ten must be added to 70 to make 80, so 80-70=10. Grade 1 students are not expected to compute differences of two-digit numbers other than multiples of ten. Deferring such work until Grade 2 allows two-digit subtraction with and without decomposing to occur in close succession.

With this standard, students are not expected to interact with problems embedded in a context. Additionally, the orientation of the problem (horizontal or vertical) is not the focus. Students should see problems expressed both ways.

Levels 4-7:
Once students have developed the understanding of why they can subtract groups of 10 and explain why that is beneficial, they should be challenged to mentally subtract groups of ten from groups of ten and provide a mathematically correct explanation of their strategy and why their strategy works (MP 3). Additionally, students should be challenged to critically think about the patterns that exist when subtracting multiples of ten to determine all multiples that can be subtracted from a given multiple of ten. Students should be able to describe and explain any patterns or generalizations used.