Grade 1
(August, September)

Unit 1: Measurement, Counting, and Data

Desired Outcomes

Standard(s):

Measure lengths indirectly and by iterating length units

1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

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.

Extend the counting sequence

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.

Represent and interpret data

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.

Transfer: *Students will apply…*

- Ordering three objects by length and compare the lengths of two objects indirectly with a third object.
- By organizing, representing and interpreting 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 in one category than in another.

Understandings: *Students will understand that …*

- Numbers are used to show how many objects are in a group.
- Numbers show how long or far away objects can be.
- There is an order for saying and writing numbers.
- Graphs use numbers to organize and compare information.
- Objects and their indirect relationships can be described using measurement.

Essential Questions:

- What are units and what do they represent?
- How can comparisons of numbers be modeled?
- Why are numbers important?
- When and how do we measure length?

Highlighted Mathematical Practices: (Practices to be explicitly emphasized are indicated with an *.)

1. **Make sense of problems and persevere in solving them.** Students demonstrate their ability to persevere by selecting a modality to begin representing their understanding (i.e. manipulatives, pictures). They can work collaboratively to represent their measurements or quantities and discuss their representations.
2. * **Reason abstractly and quantitatively.** Students will demonstrate their abstract and quantitative reasoning by estimating lengths and then refining their estimates based upon new information. They also demonstrate reasoning by explaining indirect measurements. They need to use measurement units correctly—understanding that the smaller the unit, the more units you need to measure a given object.
3. **Construct viable arguments and critique the reasoning of others.** Students will explain why they chose to represent a quantity or measurement in a particular way. They will also listen to each other and explain what their peers have said.
4. **Model with mathematics.** In this unit, students are asked to transfer between manipulative, number line, drawings and other visual representations. They are asked to explain in words how their visuals are representing measurements or quantities.
5. **Use appropriate tools strategically.** Students demonstrate their ability to use non-standard measurement units to measure lengths of objects. They need to select the correct tools and know when a number line is an appropriate representation.
6. * **Attend to precision.** Students demonstrate precision by using comparison language appropriately to describe their measurements and quantities. They count precisely to measure accurately.
7. * **Look for and make use of structure.** Students demonstrate the ability to use structure in their graphs, ten frames and on the 120 chart**.** Students can use these structures to explain the patterns and answer questions about measurements and quantities.
8. **Look for express regularity in repeated reasoning.** When students note patterns on, and can use the 10 frames, 120 chart and graphs to solve problems or create new representations, they are using their repeated reasoning.

Prerequisite Skills/Concepts:	Advanced Skills/Concepts:
Students should already be able to… • Count to 100 by ones and by tens. • Count forward beginning from a given number within the known sequence (instead of having to begin at 1). • Write numbers from 0-20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). • Understand the relationship between numbers and quantities; connect counting to cardinality. • Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects. • Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. • Compare two numbers between 1 and 10 presented as written numerals. • Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. • Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	*Some students may be ready to…* ▪ Count within 1000 by 5s, 10s, and 100s (2.NBT.2) ▪ Draw picture graphs and bar graphs to represent data sets and solve put together, take apart and compare problems about the graphs (2.MD.10)

Knowledge: *Students will know…*	**Skills:** *Students will be able to …* • Order and compare three objects by length. (1.MD.1) • Compare the length of two objects indirectly by using a third object. (1.MD.1) • Measure length of an object by laying multiple copies of a shorter object end to end. (1.MD.2) • Represent the length of an object as the total number of units represented by multiple copies of a shorter object laid end-to-end. (1.MD.2) • Apply & explain the importance of making sure that there are not any gaps or overlaps in order to get an accurate measurement. (1.MD.2) • Count within 120 starting at any number less than 120 (1.NBT.1) • Read and write any number within 120 (1.NBT.1) • When given a set of objects (within 120), represent the quantity with a written numeral (1.NBT.1) • Organize data with up to three categories in various ways. (1.MD.4) • Create a representation of data into a graph (1.MD.4) Ask and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

WIDA Standard: English Language Learners

English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

English language learners would benefit from:

- The teacher models how the length measurement of an object is the number of same-length units that span it with no gaps or overlaps. For example, pattern tiles can be used to measure the length of the student's desk top. Students will then use pattern tiles to measure their math journal, carefully positioning the tiles next to one another with no gaps. Students will verbalize the length of their notebook by saying it is ____ pattern tiles long.
- The teacher models the comparison of two rows of popsicle sticks that are equal in length. Row A will contain two whole popsicle sticks and Row B contains three halved popsicle sticks. Although, Row B has more sticks than Row A, it is not longer.

Academic Vocabulary:

Critical Terms:	Supplemental Terms:
Model Units Measure Order Compare Data	Longer Shorter Fewer Greater Equal Count Number Numeral

Assessment

Summative Assessments

How Long is Your Shoe
Measuring and Ordering (Lesson 2)
Building 2-Digit Lengths
Comparing Trains

Pre-Assessments	Formative Assessments	Self-Assessments
Sort and Count Taller or Shorter Comparing Line Lengths How Long is Your Hand	Counting to 120 Number Dictation Building Teen Numbers Vocabulary Notebook Unit 1 Graphing Assessment Measuring and Ordering (Lesson 1) Measuring Indirectly	Center Reflections

Grade 1 **Unit 2: Addition and Subtraction within 10**
(September, October, November)

Desired Outcomes

Standard(s):

Extend the counting Sequence.

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.

Add and subtract within 20.

1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

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 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); -using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent 6 + 6 + 1 = 12 + 1 = 13).

Represent and solve problems involving addition and subtraction.

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 using objects, drawings, and equations e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

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.

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

1.OA.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 +3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition). To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition).*

1.OA.4 Understand subtraction as an unknown-addend problem. *For example: subtract 10 – 8 by finding the number that makes 10 when added to 8.*

Work with addition and subtraction equations.

1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*

1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating to 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 = □.*

Represent and interpret data.

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.

Transfer: *Students will apply…*

- Counting concepts and procedures to organize and represent data using a graph using numbers within 10.
- Addition and subtraction concepts and procedures to ask and answer questions about data represented in graphs of up to three categories.
- Use problem solving structures to solve word problems within 10 (using both two and three whole numbers) involving all situations using objects, drawings, and equations.

Understandings: *Students will understand that…*

- Numbers are composed of other numbers.
- Word problems have basic problem solving structures including: Adding To, Taking From, Putting Together, Taking Apart, and Comparing.
- Unknowns can be in various locations (start, change, result) in equations and can develop from combinations of numbers.
- Addition and subtraction are related/inverse operations.
- Various strategies can be used to quickly add numbers.
- The equal sign is used to represent quantities that have the same value.

Essential Questions:

- What is the relationship between addition and subtraction?
- How do we determine the value of a number?
- Why do we take apart and put together numbers?
- How can the structure of a word problem or equation help us to solve it?
- Why are properties important in solving equations?
- What is the purpose of the equal sign?

Highlighted Mathematical Practices:

* **1. Make sense of problems and persevere in solving them.** Students will begin using doubles, near doubles, and near tens to solve problems, decomposing and composing numbers to solve with friendly numbers.
  2. Reason abstractly and quantitatively. Students will use knowledge of combinations within 10, number bonds, and part/part/whole understanding to solve unknown position of an equation.
  3. Construct viable arguments and critique the reasoning of others. Students will discuss different strategies used to represent and solve the problems and then will decide on the most efficient strategies.
* **4. Model with mathematics.** Students will use graphs, pictures, objects, and organizers (10 frames, bonds, part/part/whole) to develop a broader sense of number combinations within 10.
  5. Use appropriate tools strategically. Manipulative and visual tools will help students visualize the structure of numbers to put meaning to the equal sign within an equation.
* **6. Attend to precision.** Students attend to the language of the word problems to determine their structures and appropriate operations used to solve problems.
  7. Look for and make use of structure. Students will use the pattern and sequence knowledge gained when counting and manipulating numbers to build fluency in solving equations.
  8. Look for and express regularity in repeated reasoning. Anchor points of 5 and 10 will help students build a strong sense of the Base 10 system as they manipulate numbers within 20.

Prerequisite Skills/Concepts:

Students should already be able to…

- Represent addition and subtraction with objects, fingers, mental images, drawings, and sounds (e.g., claps), and act out situations, verbal explanations, expressions, or equations.
- Solve addition and subtraction word problems, and add and subtract within 10.
- Decompose numbers less than or equal to 10 into pairs in more than one way.
- For any number from 1 to 9, find the number that makes 10 when added to the given number.
- Fluently add and subtract within 5.

Advanced Skills/Concepts:

Some students may be ready to…

- Fluently add within 20.
- Draw picture graphs and bar graphs to represent data sets and solve Put Together, Take Apart, and Compare problems about the graphs.

Knowledge:

Students will know…

- Different problem solving strategies for composing and decomposing numbers to solve addition and

Skills: *Students will be able to do…*

- Explain how counting on and counting back relate to addition and subtraction. (1.OA.5)
- Solve word problems involving situations of adding to and taking from using objects, drawings, and equations with a symbol for the unknown number within 10. (1.OA.1)
- Solve word problems involving situations of putting together and taking apart using objects, drawings, and equations with a symbol for the unknown number within 10. (1.OA.1)

subtraction problems (for example: make a 10, use doubles, or number lines). • The meaning of the = sign.	• Solve word problems involving situations of comparing involving start unknown using objects, drawings, and equations with a symbol for the unknown number within 10. (1.OA.1) • Solve word problems involving three addends whose sum is less than 10 using objects, drawings, and equations with a symbol for the unknown number. (1.OA.2) • Identify the unknown in a subtraction problem by showing the relationship between addition and subtraction. (1.OA.4) • Fluently add and subtract within 10. (1.OA.6) • Demonstrate and explain the meaning of equality with visual models and words. (1.OA.7) • Identify if equations are true or false. (1.OA.7) • Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. (1.OA.8) • Organize data with up to three categories in various ways. (1.MD.4) • Create a graph to represent a set of data. (1.MD.4)

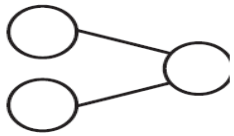
WIDA Standard:

English language learners communicate information, ideas, and concepts necessary for academic success in the content area of Mathematics.

English language learners would benefit from**:**

- Teacher modeling part/part/whole structure for numbers within 10, and then within 20 using a number bond or other visual representations. For example, the teacher places five objects in one of the parts on the left and four objects in the other part on the left and nine objects in whole on the right. Students practice placing objects in the number bond for numbers within 10. Students verbalize that ____ and ____ makes _____.

  part part whole
- The teacher writes numerals in each of the parts and whole. Students continue using concrete objects to represent part-part-whole and write the corresponding numerals in the number bond template. The teacher writes the corresponding addition or subtraction equation that matches the numerals written in the number bond.
- The teacher models addition and subtraction situations (Add To, Take From, Put Together/Take Apart, Compare) using the language of part-part-whole.
- As the teacher reads the story problem, one sentence at a time, she can ask, "Is this amount a part or the whole?" to aid with comprehension. Teacher completes the number bond. This visual aide supports students' understanding of the information contained in the problem.



Academic Vocabulary:

Critical Terms:	Supplemental Terms:
Addition Subtraction Equation Equal Equal sign Adding to Taking from Putting together Taking apart Comparing Remainder Difference Sum Unknown	Plus sign Minus sign More Less Greater Symbol Start Change Result Number bonds

Assessment

Summative Assessments

Completing Equations
Understanding of an Equal Sign
Beach Time
Make 10
Sorting Fruit Snacks

Pre-Assessments	Formative Assessments	Self-Assessments
• Count and Write • Combinations of 5	• Oral Counting • Using Properties to Add and Subtract • Balanced Sentences • Roll Your Facts within 10 • Snap It	

Assessment		
Summative Assessments Decomposing Teen Numbers Numeral Recording Sheet Making 10 and More Applying Properties Understanding the Meaning of the Equal Sign Balancing Missing Number with Diagrams Graphing Cars		
Pre-Assessments	Formative Assessments	Self-Assessments
Snap-it	Subtract by Adding Number Line Addition and Subtraction Oral Counting Write Numerals to 120 Identify the Symbol Giant Story Problems Number Line Comparisons 1-20 War Twenty Frame War Domino Comparison Snap-it Bump! Doubles/Doubles +1 Total Three	Making 10 and More

Grade 1 **Unit 3: Addition and Subtraction within 20**
(November, December, January)

Desired Outcomes

Transfer: *Students will apply…*

- Addition and subtraction fluency skills within ten to solve a variety of word problem types within twenty.
- Properties of operations to solve word problems using three whole numbers (part/part/whole) to combine to sums less than or equal to twenty.
- Addition and subtraction problem solving skills to create and interpret data with up to three categories.
- Concepts and procedures regarding sorting and counting to organize and represent data using a graph containing numbers within ten.
- Knowledge of graphs to ask and answer questions about a graph using numbers within ten (questions about the total number of data points including "How many are in each category?" and "How many more or less are in one category than in another?").

Understandings: *Students will understand that…*

- Properties of addition and subtraction reflect the relationship of addition and subtraction as the parts of the whole within an equation.
- Strategies can be used to decompose complex problems to make an easier problem (counting on, make a ten, near ten, doubles, doubles +1.+2).
- Word problems can be represented using multiple modalities.
- Problem solving structures reinforce part/part/whole and number combinations within twenty.
- Unknowns can be in different places. (start, change, results)
- There are different problem solving structures including: adding to, taking from, putting together, taking apart, comparison.
- Value of a digit may be different depending upon its place in the number.
- Numbers can be compared to other numbers by using the words 'greater than,' 'less than,' or 'equal to.'

Essential Questions:

- How are strategies and properties used when adding and subtracting?
- How are teen numbers composed and decomposed?
- How are models, symbols, and words used to compare numbers?
- How does identifying and representing problem solving structures help us solve for unknowns?

Highlighted Mathematical Practices: (Practices to be explicitly emphasized are indicated with an *.)

1. **Make sense of problems, and persevere in solving them.** Students will use the problem solving structures, understanding of properties, and the number combinations within equations to solve increasingly complex sets of numbers within twenty.

* 2. **Reason abstractly and quantitatively.** Students will work with bare number tasks after using objects and representations of numbers to solve problems and build fluency within ten. They will extend these practices to twenty.

3. **Construct viable arguments, and critique the reasoning of others.** Students will discuss representations in different modalities to build a broader understanding of relationship to equations. They will critique others' representations and arguments regarding these combinations.

* 4. **Model with mathematics.** Students will build equations first with objects and representations, and then move to organizers with the numbers. They will gradually apply number knowledge and number relationships to extend place value knowledge

5. **Use appropriate tools strategically.** Use of manipulatives to represent numbers helps students see properties and the organizational structure within problem solving types.
6. **Attend to precision.** Students apply quantitative number knowledge to represent number/numbers within a problem on a number line with the end as the total.

* 7. **Look for and make use of structure.** Students first use the anchor of 5 and then anchor of 10 to decompose and compose the teen numbers.

8. **Look for and express regularity in repeated reasoning.** Students will use understanding of combinations to ten to better understand the combinations to twenty.

Prerequisite Skills/Concepts:

Students should already be able to…

- Use strategies such as counting on, making ten, decomposing a number leading to a ten, and using the relationship between addition and subtraction to add and subtract within ten.
- Apply properties of operations as strategies to add and subtract. *(Commutative property of addition and associative property of addition).*
- Compose and decompose numbers using drawing, objects, or equations from eleven to nineteen into ten ones and some further ones.

Advanced Skills/Concepts:

Some students may be ready to…

- Add within 100 using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Fluently add within twenty.
- Draw picture graphs and bar graphs to represent data sets and solve put together, and take apart and compare problems about the graphs.

Knowledge:

Students will know…

- Strategies to quickly solve addition and subtraction problems within twenty.
- Each type of word problem situation (adding to, taking from, putting together, taking apart, comparing).
- All three unknown problem types (results, change, start).

Skills:

Students will be able to …

- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing involving results unknown using objects, drawings, and equations with a symbol for the unknown number. (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 involving change unknown using objects, drawings, and equations with a symbol for the unknown number. (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 involving start unknown using objects, drawings, and equations with a symbol for the unknown number. (1.OA.1)
- Solve word problems involving three addends whose sum is less than 20 using objects, drawings, and equations with a symbol for the unknown number. (1.OA.2)
- Use and explain strategies for solving word problems involving three addends. (1.OA.2)
- Apply the commutative property of operations as a strategy to add and subtract. (1.OA.3)
- Apply the associative property of operations as a strategy to add and subtract. (1.OA.3)
- Identify the unknown in a subtraction problem by showing the relationship between addition and subtraction. (1.OA.4)

	• Add by counting all, counting on, and recognizing that '+1' means the next number and that '+2' means the number that is two numbers after in the counting sequence. (1.OA.5) • Subtract by counting back, counting up from, and recognizing that '-1' means the number before, and that '-2' means the number that is two numbers before in the counting sequence. (1.OA.5) • Fluently add and subtract within 10. (1.OA.6) • Add and subtract within twenty, demonstrating fluency for addition and subtraction within ten. Use strategies such as counting on, making 10, decomposing a number leading to 10, doubles, using the relationship between addition & subtraction, and creating equivalent but lesser known sums. (1.OA.6) • Demonstrate and explain the meaning of equality with visual models and words. (1.OA.7) • Identify if equations are true or false. (1.OA.7) • Determine the unknown whole number in an addition equation relating to three whole numbers. (1.OA.8) • Determine the unknown whole number in a subtraction equation relating to three whole numbers. (1.OA.8) • Count to 120 starting at any number (1.NBT.1) • Read numbers to 120 (1.NBT.1) • Write numbers to represent any number of objects to 120 (1.NBT.1) • Explain the value of each digit in a two digit number (1.NBT.2) • Identify a bundle of 10 ones as a "ten" (1.NBT.2) • Represent a 2 digit numeral using "tens" and "ones" (1.NBT.2) • Represent a 2 digit numeral ending in 0 (ranging from 10-90) using "tens" and 0 "ones" (1.NBT.2) • Describe number of tens and ones to determine value of number. (1.NBT.3) • Use models to represent two sets of numbers. Use comparison words greater than, less than, and equal to communicate understanding of the relationship between the numbers. (1.NBT.3) • Organize data with up to three categories in various ways. (1.MD.4) • Create a representation of data into a graph. (1.MD.4) • Asking and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Academic Vocabulary:	
Critical Terms: Addition Subtraction Equation Equal Equal sign Adding to Taking from Putting together Taking apart Comparing Remainder Difference Sum Unknown Digit Place value Tens Ones	**Supplemental Terms:** Plus sign Minus sign More Less Greater Symbol Start Change Result

Assessment

Summative Assessments

Decomposing Teen Numbers
Numeral Recording Sheet
Making 10 and More
Applying Properties
Understanding the Meaning of the Equal Sign
Balancing Missing Number with Diagrams
Graphing Cars

Pre-Assessments	Formative Assessments	Self-Assessments
• Snap-it	• Subtract by Adding • Number Line Addition and Subtraction • Oral Counting • Write Numerals to 120 • Identify the Symbol • Giant Story Problems • Number Line Comparisons • 1-20 War • Twenty Frame War • Domino Comparison • Snap-it • Bump! Doubles/Doubles +1 • Total Three	• Making 10 and More

Grade 1
(January, February)

Unit 4: 2-Digit Place Value

Desired Outcomes

Standard(s):

Extend the counting Sequence

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.

Understand place value

1.NBT.2 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).

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 >, =, <.

Represent and interpret data

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.

Transfer: *Students will apply…*

- Understanding of ten as a unit to analyze teens as ten and some ones.
- Counting skills to analyze and compare 2-digit values.

Understandings: *Students will understand that …*

- A unit of 10 is made of 10 ones.
- Two-digit numbers are composed of units of tens and some ones.
- Numbers can be represented in different ways to demonstrate tens and ones in a two digit number.
- Comparison symbols (<, >, =) are used to show the relationship between numbers.

Essential Questions:

- What is significant about the teen numbers (related to 10)?
- How is counting connected to quantity in a number?
- What determines the value of each digit in a number?

Highlighted Mathematical Practices: (Practices to be explicitly emphasized are indicated with an *.)

1. **Make sense of problems and persevere in solving them.** Students will use strategies of counting manipulatives and visuals by tens and by ones and adding groups of tens and groups of ones to solve mathematical problems involving 2 digit numbers. They use the idea of "ten and some more" for combinations up through 20.
* 2. **Reason abstractly and quantitatively.** When counting 2 digit numbers, students will build the quantity (with objects) in each number, to visualize the number (in terms of tens and ones) up to 120.
* 3. **Construct viable arguments and critique the reasoning of others.** Students will represent numbers with multiple models of objects, moving to organizing structures that allow students to move from perceptual subitizing (instantly seeing small groups) to conceptual subitizing (seeing small groups within a large group, as well as the large group). Students will be able justify their reasoning and effectively question peers to gain a better understanding of how to apply strategies to different contexts.
4. **Model with mathematics.** Students will begin building individual numbers to develop sense of groups of tens and some ones before they combine numbers and add tens and ones collectively.
* 5. **Use appropriate tools strategically.** Base-10 materials, such as digi-blocks or ten frames with counters, are used to model individual numbers, and numbers between 10 and 20 are to be represented as a unit of 10 and some ones.
6. **Attend to precision.**
* 7. **Look for and make use of structure.** Anchor points of 5, then 10 become essential building blocks in Conceptual Place Value as students use number combinations within 10, and number combinations within 20 to make sense of 2-digit numbers.
8. **Look for and express regularity in repeated reasoning.** Students apply knowledge and strategies of number combinations within 10 to develop strategies for larger 2 digit numbers, applying relationship of number from small equations to larger equations.

Prerequisite Skills/Concepts:

Students should already be able to…

- Compose and decompose numbers from 11 to 19 into ten, ones and some further ones.

Advanced Skills/Concepts:

Some students may be ready to…

- Use addition and subtraction within 100 to solve one- and two-step word problems.

Knowledge: *Students will know…*	**Skills:** *Students will be able to …*
• Comparison symbols <, > and =	• Count to 120 starting at any number less than 120 (1.NBT.1) • Read and write any number from 0-120 (1.NBT.1) • When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1) • Explain the value of each digit in a two digit number (1.NBT.2) • Identify a bundle of 10 ones as a "ten" (1.NBT.2) • Represent a 2 digit numeral using "tens" and "ones" (1.NBT.2) • Represent a 2 digit numeral ending in 0 (ranging from 10-90) using "tens" and 0 "ones" (1.NBT.2) • Describe number of tens and ones to determine value of number. (1.NBT.3) • Use models to represent 2 sets of numbers. Use comparison words greater than, less than, and equal to communicate understanding of the relationship between the numbers. (1.NBT.3) • Organize data with up to three categories in various ways. (1.MD.4) • Create a representation of data into a graph (1.MD.4) • Ask and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Academic Vocabulary:

Critical Terms:	**Supplemental Terms:**
Greater than Less than Equal to Equal sign Comparing Digit Place Value Tens Ones Ten and some more	Decomposing Composing Compensation Conceptual Place Value

Assessment		
Summative Assessments Numeral Recording Sheet Building Teen Numbers Comparing Numbers Favorite Ice Cream		
Pre-Assessments	**Formative Assessments**	**Self-Assessments**
Build It! Comparison Words	Oral Counting Race to 100 Identify the Symbol within 100 Building 2-digit numbers Tens Match -Concentration Twenty Frame Match Game Race to 100/120 Tens Match Game Domino Comparison	Identify the Symbol within 100 Assessment

Grade 1 **Unit 5: Addition and Subtraction within 100**
(March, April)

Desired Outcomes

Standard(s):

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

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding 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 addition of two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples 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.

Extend the counting sequence.

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.

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

1.OA.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 +3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition). To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition).*

1.OA.4 Understand subtraction as an unknown-addend problem. *For example: subtract 10 – 8 by finding the number that makes 10 when added to 8.*

Add and subtract within 20

1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Work with addition and subtraction equations.

1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*

1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating to 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 = □.

Represent and interpret data

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.

Transfer: *Students will apply…*

- Base ten and number combination concepts to interpret the value of 2-digit numbers when representing quantities in real world contexts and addition or subtraction problem solving situations.
- Properties of operations and the relationship between addition and subtraction problems using strategies based on place value.
- Addition and subtraction problem solving skills to create and interpret data with up to three categories.
- Knowledge of strategies to write and explain their reasoning.
- Knowledge of graphs to ask and answer question about a graph using numbers within 10 (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).

Understandings: *Students will understand that …*

- Two digit numbers are composed of groups of tens and some ones.
- The value of a digit is different, depending upon its place in the number.
- Numbers can be represented with different models but still have the same value.
- Decade numbers are groups or units of tens.
- Commutative and Associative Properties demonstrate decomposing and representing numbers within equations.
- Identification of 10 more/10 less is the same as adding or subtracting ten.
- Addition and subtraction are related/inverse operations
- Various strategies can be used to quickly add numbers.
- The equal sign is used to represent quantities that have the same value.

Essential Questions:

- How do properties of operations relate to addition and subtraction?
- What is the purpose of using properties in adding or subtracting numbers?
- Why is it important to know multiple strategies in solving addition/subtraction problems?
- How does using objects and drawings help me represent problems in multiple ways?
- What do equations represent?
- What is the purpose of the equal sign?

Highlighted Mathematical Practices: (Practices to be explicitly emphasized are indicated with an *.)

***1. Make sense of problems and persevere in solving them.** Explain what it means to decompose a two-digit number into two parts (numbers less than 100) and explain how to solve addition problems involving 1-digit numbers, 2-digit numbers, and multiples of 10. Analyze equations with missing values in any position and be able to solve them.

2. Reason abstractly and quantitatively. Students can mentally find 10 more/10 less without having to count. They understand the quantities that are represented in a two-digit decomposed number.

3. Construct viable arguments and critique the reasoning of others. Students will accurately and efficiently explain the reasoning behind the use of a specific strategy.

***4. Model with mathematics.** Students represent addition and subtraction situations using manipulative and visual models. They use these models to make sense of addition and subtraction situations and help them solve for unknowns in equations.

***5. Use appropriate tools strategically.** Students will select appropriate base 10 tools to represent quantities in addition or subtraction situations. Such tools might include linking cubes, ten frames, hundred grids, number lines, digi-blocks, base ten blocks, etc.

6. Attend to precision. Students state the meaning behind the +, -, and = symbols and apply the signs consistently and appropriately. They will use appropriate mathematical language to describe the tools and strategies used to represent and solve problems.

***7. Look for and make use of structure.** Students are able to use known combinations to derive answers to unknown problems. For example, students may recognize 30 + 20 = 50 because they know that 3 tens + 2 tens = 5 tens.

***8. Look for and express regularity in repeated reasoning.** Students may demonstrate repeated reasoning when they use addition to solve subtraction problems. For example, when solving 90-60, they may think of it as 60 + __ = 90. They also can generalize that number combinations within 10 are used to add decades within 100.

Prerequisite Skills/Concepts: *Students should already be able to…* • Add and subtract within 20 • Represent number combinations using all modalities. • Fluently count within 120. • Use strategies such as counting on, making ten, decomposing a number leading to a ten, and using the relationship between addition and subtraction to add and subtract within 10. • Apply properties of operations as strategies to add and subtract. *(Commutative property of addition and Associative property of addition).* • Compose and decompose numbers using drawing, objects, or equation using tens	**Advanced Skills/Concepts:** *Some students may be ready to…* • Apply strategies when using bare numbers without models, drawings or manipulatives. • Fluently add and subtract within 100 • Add and subtract within 1000
Knowledge: *Students will know…* • Counting sequence to 120 • Strategies to quickly solve addition and subtraction problems within 100. • The meaning of the = sign.	**Skills**: *Students will be able to do…* • When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1) • Given a number between 75 and 100, students can count, read and write to 120. (1.NBT.1) • Use concrete models or drawings and strategies to add within 100 and record using vertical and horizontal symbolic models. (1.NBT.4) • Use concrete models or drawings and strategies to subtract within 100 and record using vertical and horizontal symbolic models. (1.NBT.4) • Build and decompose 2-digit numbers into tens and ones. (1.NBT.4) • Represent different problem types (start, change, result) involving addition of 2-digit numbers using any combination of words, numbers, physical objects, or symbols. (1.NBT.4) • Explain and justify mathematical thinking verbally, written and with mathematical symbols. (1.NBT.4) • Explain how to find ten more or ten less than a given two-digit number. (1.NBT.5) • Given a 2-digit number, students will mentally add 10 and explain reasoning using place value understanding. (1.NBT.5)

	• Given a 2-digit number, students will mentally subtract 10 and explain reasoning using place value understanding. (1.NBT.5) • Given a decade number in the range of 10-90, students will subtract multiples of 10 (in the range of 10-90) using concrete models and place value strategies (1.NBT.6) • Use concrete models, drawings and place value strategies to subtract multiples of ten from decade numbers. (1.NBT.6) • Relate the chosen strategy to a written method and explain the reasoning used. (1.NBT.6) • Apply and explain associative and commutative property of operations as a strategy to add and subtract. (1.OA.3) • Identify the unknown in a subtraction problem by showing the relationship between addition and subtraction. (1.OA.4) • Add by counting all and counting on. (1.OA.5) • Subtract by counting back and counting up from. (1.OA.5) • Explain how counting on and counting back relate to addition and subtraction. (1.OA.5) • Demonstrate and explain the meaning of equality with visual models and words within 100 (1.OA.7) • Identify if equations are true or false within 100. (1.OA.7) • Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. (1.OA.8) • Organize data with up to three categories in various ways. (1.MD.4) • Create a representation of data into a graph. (1.MD.4) • Asking and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Academic Vocabulary:	
Critical Terms:	**Supplemental Terms:**
Compose	Properties of Operations
Decompose	Commutative Property
Unknown	Associative Property
Addend	Relationship
Part/part/whole	Plus sign
Mentally	Minus sign
Multiple of 10	More
Decade	Less
Digit	Greater
Place	Symbol
Value	Start
Tens	Change
Ones	Result
Sum	Number bonds
Difference	
Addition	
Subtraction	
Remainder	
Difference	
Adding to	
Taking from	
Putting together	
Taking apart	
Comparing	
Equal	
True	
False	
Equal sign	
Group	

Assessment		
Summative Assessments Write Numerals to 120 Numeral Recording Sheet Identify the Symbol within 100 Domino/Hundred Chart Comparison Subtracting Multiples Applying Properties Equal/Not Equal Unknown Numbers		
Pre-Assessments	**Formative Assessments**	**Self-Assessments**
Equivalence	Oral Counting Representing Numbers Adding within 100 Representing Numbers Finding 10 more/10 less Multiples of 10 Properties Equal Sums Equal Differences Unknown Numbers using Multiples	Identify the Symbol within 100

Grade 1
(April, May)

Unit 6: Geometry and Time

Desired Outcomes

Standard(s):

Reason with shapes and their attributes.

1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

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.

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.

Tell and write time.

1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.

Transfer:

Students will apply…

- Knowledge of partitioning shapes to telling time.
- Knowledge of composing and decomposing shapes to create composite shapes.
- Understanding of shapes and components to recognize and represent shapes in our world.

Understandings:

Students will understand that …

- Shapes are all around our world and can be put together or taken apart to form other shapes.
- Time is measured in hours and minutes and can be shown on different kinds of clocks.
- Objects can be sorted, described or built based on certain attributes.
- Decomposing into more equal shares creates smaller shares.

Essential Questions:

- How are dividing a circle and telling time related?
- How are shapes used in the real world?
- How are shapes unique?
- How is time measured?

Highlighted Mathematical Practices: (Practices to be explicitly emphasized are indicated with an*.)

1. **Make sense of problems and persevere in solving them.** Students make sense of time by reading clocks and representing time on clocks.
2. **Reason abstractly and quantitatively.** Students will distinguish between defining and non-defining attributes of shapes.
3. **Construct viable arguments and critique the reasoning of others.** Students construct arguments when they represent time on a clock and they critique others when they explain why they agree or disagree with peers regarding their representations.

* 4. **Model with mathematics.** Students will compose two- and three- dimensional shapes to create a composite shape and compose new shapes from the composite shape. Students make the connection that the circular clock can be divided into halves to tell time to the half hour.

5. **Use appropriate tools strategically.** Students can fold circles and rectangles into two and four equal shares. They also use clocks appropriately to tell and represent time.

* 6. **Attend to precision.** Students can build and draw shapes to possess defining attributes and can explain that a whole circle or rectangle can be described as two of the shares when folded in half or as four of the shares when folded in fourths. They use precise language of "half," "fourth," and "quarter."

7. **Look for and make use of structure.** Students will understand that decomposing a circle or square into more equal shares creates smaller shares.
8. **Look for and express regularity in repeated reasoning.** Students generalize that each time they divide a circle or rectangle into 2 equal pieces, they're making halves and each time they divide a circle or rectangle into 4 pieces, they're making fourths or quarters.

Prerequisite Skills/Concepts:

Students should already be able to…

- Describe objects in the environment using names of shapes, and describe the relative positions of these objects.
- Correctly name shapes regardless of their orientations or overall size.
- Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
- Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts.
- Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
- Compose simple shapes to form larger shapes.

Advanced Skills/Concepts:

Some students may be ready to…

- Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

Knowledge: *Students will know…*	**Skills:** *Students will be able to …*
• Part-whole relationship of shapes. • Properties of shapes.	• Determine which attributes of a shape are defining compared to attributes that are non-defining using models or pictures. (1.G.1) • Build and draw shapes to possess defining attributes. (1.G.1) • Build two-dimensional composite shapes from other shapes (1.G.2) • Build three-dimensional composite shapes from other shapes. (1.G.2) • Divide circles and rectangles into two and four equal parts. Describe the pieces by using the words *halves, fourths, and quarters*. (1.G.3) • Put the pieces back together to make a whole. Describe the whole as 2 halves or 4 fourths. (1.G.3) • Recognize the difference between the hour hand and the minute hand. (1.MD.3) • Determine where the minute hand must be when the time is to the hour (o'clock). (1.MD.3) • Determine where the minute hand must be when the time is to the half hour (thirty). (1.MD.3) • Compare analog clocks to digital clocks and recognize the relationship between the two. (1.MD.3) • Count to 120 starting at any number less than 120 (1.NBT.1) • Read and write any number from 0-120 (1.NBT.1) • When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1) • Organize data with up to three categories in various ways. (1.MD.4) • Create a representation of data into a graph (1.MD.4) • Asking and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

WIDA Standard: English Language Learners

English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.

English language learners would benefit from:

- The teacher modeling using pattern blocks to show that an isosceles triangle can be used to make larger two-dimensional shapes such as a rhombus, trapezoid, and hexagon.
- Students practice using pattern blocks create all a variety of composite representations of each shape. For example, students will lay two isosceles triangles on top of a rhombus; lay one isosceles triangle and one rhombus on a trapezoid; six isosceles triangles on a hexagon, and so on.
- Students can then use pattern blocks to create designs that incorporate for example, six isosceles triangles and one hexagon, and one trapezoid and one rhombus and two isosceles triangles to show their understanding of shape composition.
- Students will have ample opportunity to explore shape composition using geo-blocks to create larger shapes. Students will verbalize the names of the three-dimensional shapes represented within the larger shape.
- The teacher modeling how to create a composite shape, and compose new shapes from the composite shape. The teacher folds a paper circle in half and lays the new shape, the half, on top of another whole circle. The teacher folds a paper circle in half and then in half again and places the new shape, the fourth or quarter, on top of a whole circle.
- Students will practice folding the paper circles to create halves and fourths. As students describe their shapes, they will use academic vocabulary to tell that two of the shares represent *half of* the circle; one of the shares represent either a *fourth of* or a *quarter of* the circle.

Academic Vocabulary:

Critical Terms:

Rectangular prism
2-dimensional
3-dimensional
Hour
Minute
Trapezoid
Half circle
Quarter circle
Halves
Fourths
Quarters
Half of
Fourth of
Quarter of
Equal shares

Supplemental Terms:

Triangle
Circle
Square
Rectangle
Hexagon
Cube
Sphere
Cone
Cylinder
Flat
Solid

Assessment

Summative Assessments

Build It and Prove It
Create and Describe
Telling Time
Hours and Half Hours

Pre-Assessments	Formative Assessments	Self-Assessments
How Did They Sort Jack the Builder	What Makes This a …? Geometry Stations Is It or Isn't It? Equal Shares Telling Time	Geometry Stations