U46 Curriculum
U-46 First Grade Mathematics

Module 1 – Sums and Differences to Ten Domain(s): Operations and Algebraic Thinking Trimester(s): 1
Transfer: *Students will apply…* 1. Counting concepts and procedures to organize and represent data using a graph using numbers within 10. 2. Addition and subtraction concepts and procedures to ask and answer questions about data represented in graphs of up to three categories. **3.** 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…* 1. Numbers are composed of other numbers. 2. Word problems have basic problem solving structures: adding to, taking from, putting together, taking apart, comparing. 3. Unknowns can be in various locations (start, change, result) in equations and develop from combinations of numbers. 4. Addition and subtraction are related/inverse operations. 5. Various strategies can be used to quickly add numbers. 6. The equal sign is used to represent quantities that have the same value.
Essential Question(s): 1. What is the relationship of addition and subtraction? 2. Why do we take apart and put together numbers? 3. How can the structure of a word problem or equation help us to solve it? 4. Why are properties important in solving equations? 5. What is the purpose of the equal sign?
Knowledge: *Students will know…* 1. Different problem solving strategies for composing and decomposing numbers to solve addition and subtraction problems (for example: make a 10, use doubles, number lines). 2. The meaning of the = sign.

Skills: Students will be able to …

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

Clusters/Standards

Focus Grade Level Standards2

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, with unknowns in all positions, e.g., by using objects, drawings and equations with a symbol for the unknown number to represent the problem.(See Glossary, Table 1.)
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. (Students need not use formal terms for these properties.) 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).
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
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 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 = □.

Common Core Practice Standards:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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:
1. Teacher modeling part/part/whole structure for numbers within 10, and then 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
2. The teacher writing 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 writing the corresponding addition or subtraction equation that matches the numerals written in the number bond.
3. The teacher modeling addition and subtraction situations (add to, take from, put together/take apart, compare) using the language of part-part-whole.
4. As the teacher reads the story problem, one sentence at a time, she can ask, "Is this amount a part or the whole?" To aide with comprehension. Teacher completes the number bond. This visual aide supports students' understanding of the information contained in the problem.

Assessments

Student Learning Experiences / Tasks:

Sprints / Number Bond Dash
Problem Sets
Exit Tickets
Homework

Instructional Resources/Assessment (Mid and End of Module Assessment):

EngageNY http://www.engageny.org/sites/default/files/resource/attachments/g1-m1-full-module.pdf

Vocabulary:

Critical Terms:
Addition
Subtraction
Equation
Equal
Equal sign
Adding to
Taking from
Putting together
Taking apart
Comparing
Remainder
Difference
Sum
Unknown

Module 2 – Introduction to Place Value Through Addition and Subtraction within 20 **Domain(s): Operations and Algebraic Thinking / Number and Operations Base 10** **Trimester(s): Trimester 1& 2**
Transfer: *Students will apply…* 1. Transfer: Students will apply… 2. Addition and subtraction fluency skills within 10 to solve a variety of word problem types within 20. 3. Properties of operations to solve word problems using three whole numbers (part/part/whole) to combine to sums less than or equal to 20. 4. Addition and subtraction problem solving skills to create and interpret data with up to three categories. 5. Concepts and procedures regarding sorting and counting to organize and represent data using a graph using numbers within 10. **6.** 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…* 1. Properties of addition and subtraction reflect the relationship of addition and subtraction, the parts of the whole within an equation 2. Strategies can be used to decompose complex problems to make an easier problem (counting on, make a ten, near ten, doubles, doubles +1.+2) 3. Word problems can be represented using multiple modalities 4. Problem solving structures reinforce part/part/whole and number combinations within 20
Essential Question(s): 1. Why is it important to know multiple strategies in solving addition/subtraction problems? 2. What is the purpose of using properties in adding or subtracting numbers? 3. How are problem solving strategies connected to number relationships?
Knowledge: *Students will know…* 1. Strategies to quickly solve addition and subtraction problems within 20. 2. Each type of word problem situation (adding to, taking from, putting together, taking apart, comparing). 3. All three unknown problem types (results, change, start).

Skill: *Students will be able to do…*

1. Fluently add and subtract within 10. (1.OA.6)
2. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. 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)
3. 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)
4. 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)
5. 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)
6. 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)
7. Identify the unknown in a subtraction problem by showing the relationship between addition and subtraction. (1.OA.4)
8. Organize data with up to three categories in various ways. (1.MD.4)
9. Create a representation of data into a graph. (1.MD.4)

Clusters/Standards:

Focus Grade Level Standards

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, with unknowns in all positions, 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. (Students need not use formal terms for these properties.) 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.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the

relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 − 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

<u>Understand place value.</u>

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.

Common Core Practice Standards:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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:

1. Teacher modeling part/part/whole structure for numbers within 10, and then 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

2. The teacher writing 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 writing the corresponding addition or subtraction equation that matches the numerals written in the number bond.

3. The teacher modeling addition and subtraction situations (add to, take from, put together/take apart, compare) using the language of part-part-whole.

4. As the teacher reads the story problem, one sentence at a time, she can ask, "Is this amount a part or the whole?" To aide with comprehension. Teacher completes the number bond. This visual aide supports students' understanding of the information contained in the problem.

Student Learning Experiences / Tasks:
Problem sets
Exit tickets
Homework

Instructional Resources/Assessment (Mid and End of year Module Assessment):
EngageNY http://www.engageny.org/resource/grade-1-mathematics-module-2

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

Module 3 – Ordering and Comparing Length Measurements as Numbers
Module 3 – Ordering and Comparing Length Measurements as Numbers **Domain(s): Operations and Algebraic Thinking /Measurement and Data** **Trimester(s): 2**
Transfer: *Students will apply…* 1.   Ordering three objects by length and compare the lengths of two objects indirectly with a third object. **2.**   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…* 1.   Numbers are used to show how many objects are in a group. 2.   Numbers show how long or far away objects can be. 3.   There is an order for saying and writing numbers. 4.   Graphs use numbers to organize and compare information. 5.   Objects and their indirect relationships can be described using measurement.
Essential Question(s): 1.   What are units and what do they represent? 2.   How can comparisons of numbers be modeled? 3.   Why are numbers important? 4.   When and how do we measure length?
Knowledge: *Students will know…* 1.
Skill: *Students will be able to do…* 1. Order and compare three objects by length. (1.MD.1) 2. Compare the length of two objects indirectly by using a third object. (1.MD.1) 3. Measure length of an object by laying multiple copies of a shorter object end to end. (1.MD.2)

4. 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)

5. 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)

6. Count to 120 starting at any number less than 120 (1.NBT.1)

Clusters/Standards:

Focus Grade Level Standards

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, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See Glossary, Table 1.)

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. 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.

Common Core Practice Standards:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

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:

1. 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.

2. 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.

Student Learning Experiences / Tasks:

Problem sets
Exit tickets
Homework

Instructional Resources/Assessments (Mid and End of the year module assessment):

Engage NY http://www.engageny.org/sites/default/files/resource/attachments/math-g1-m3-full-module.pdf

Vocabulary:

Model
Units
Measure
Order
Compare
Data
Longer
Shorter
Fewer
Greater
Equal
Count
Number
Numeral

Module 4 – Place Value, Comparison, Addition and Subtraction to 40
Domain(s): Operations and Algebraic Thinking/ Numbers and Operations base 10
Trimester(s): 2&3

Transfer: *Students will apply…*

2 Digit Place Value
1. Understanding of ten as a unit to analyze teens as ten and some ones.
2. Use modalities to build individual numbers with tens/ones while counting.
3. Quantity of numbers with materials, then bare numbers to compare two two-digit numbers using symbols (<,>,=).
4. Knowledge of counting sequence to understanding counting by 10s, identifying 10 more, 10 less.

Addition and Subtraction within 40

1. 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.

Understandings: *Students will understand that…*

2 Digit Place Value
1. A unit of 10 is made of 10 ones.
2. Two-digit numbers are composed of units of tens and some ones.
3. Numbers can be represented in different ways to demonstrate tens and ones in a two digit number.
4. The meaning of the comparison symbols (<,>,=)

Addition and Subtraction within 40
1. Two digit numbers are composed of groups of tens and some ones.
2. Decade numbers are groups or units of tens.
3. Commutative and Associative Properties demonstrate decomposing and representing numbers within equations.
4. Counting is connected to adding and subtracting.
5. Identification of 10 more/10 less is the same as adding or subtracting ten.
6. Addition can be used to solve subtraction.
7. Decomposing numbers so that the numbers can be recombined for a 10 or group of 10, and some more.

Essential Question(s):

2 Digit Place Value
1. What is significant about the teen numbers (related to 10)?
2. How is counting connected to quantity in a number?
3. How can the level of strategy you use indicate how much you know about place value?

Addition and Subtraction within 40

1. How do addition and subtraction relate to counting?
2. How does understanding properties of operations help me with strategies when I calculate? (See CCSS Page 90 Table 3)
3. How does using objects and drawings help me represent problems in multiple ways?
4. What do equations represent?

Knowledge: *Students will know…*

2 Digit Place Value

1. Comparison symbols <, > and =

Addition and Subtraction within 40

1. Decompositions of number within 10.
2. Strategies of near ten, doubles, doubles +1, +2.
3. Counting sequence to 120.

Skill: *Students will be able to do…*

2 Digit Place Value
1. Explain the value of each digit in a two digit number (1.NBT.2)
2. Identify a bundle of 10 ones as a "ten" (1.NBT.2)
3. Represent a 2 digit numeral using "tens" and "ones" (1.NBT.2)
4. Represent a 2 digit numeral ending in 0 (ranging from 10-90) using "tens" and 0 "ones" (1.NBT.2)
5. Describe number of tens and ones to determine value of number. (1.NBT.3)
6. 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)
7. Build and decompose numbers into tens and ones. (1.NBT.4)

8. Represent a problem situation involving addition of 2-digit numbers using any combination of words, numbers, physical objects, or symbols. (1.NBT.4)
9. Mentally add ten to a given 2-digit number on and off decade. (1.NBT.5)
10. Mentally take 10 from a given 2-digit number on and off decade. (1.NBT.5)
11. Explain how to find ten more or ten less than a given two-digit number. (1.NBT.5)
12. Relate the chosen strategy to a written method and explain the reasoning used. (1.NBT.6)
13. Count to 120 starting at any number less than 120 (1.NBT.1)
14. Read and write any number from 0-120 (1.NBT.1)
15. When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1)
16. Organize data with up to three categories in various ways. (1.MD.4)
17. Create a representation of data into a graph (1.MD.4)
18. Ask and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Addition and Subtraction within 40

1. Use concrete models or drawings and strategies to add within 40 and record using vertical and horizontal symbolic models. (1.NBT.4)
2. Use concrete models or drawings and strategies to subtract within 40 and record using vertical and horizontal symbolic models. (1.NBT.4)
3. When given a set of objects (ranging from 0-120), represent the quantity with a written numeral

Clusters/Standards:
Focus Grade Level Standards1

<u>Represent and solve problems involving addition and subtraction</u>.
1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. (See CCLS Glossary, Table 1.)

<u>Extend the counting sequence</u>.

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.4

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."

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 meaning of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

Use place value understanding and properties of operations to add and subtract.5

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones, and sometimes it is necessary to compose a ten.

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

1.NBT.6 Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Common Core Practice Standards

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

WIDA Standard:

Place value:

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

English language learners would benefit from:

1. Teacher modeling using base-ten blocks and a place value chart how to solve problems such as 9 + 4. Students repeatedly practice using

base-ten blocks and the place value chart to represent addition situations concretely. Students will verbalize the number of tens and ones and the numeral they represent. i.e.; one ten and 3 ones is the same as thirteen.

2. Teacher modeling how to solve problems such as 9 + 4 using number bonds. For example, Teacher asks which number in this equation is closer to ten? What do we need to make a ten? Decompose the second number into 1 and 3. Nine and one makes ten. Ten and three makes thirteen.
9 + 4
1 3 Students repeatedly practice decomposing and recombining numbers using the number ten as a benchmark as they complete their solution using a number bond representation. Students verbalize the addends that make ten and then that ten and the remaining ones make a new number.

3. Teacher modeling how to solve problems such as 19 + 4 using number bonds. For example, teacher asks which number in this equation is closer to a ten? Which ten? What do we need to make twenty? Decompose the second number into 1 and 3. Nineteen and one makes twenty. Twenty and three makes twenty-three.
1 + 4
1 3 Students repeatedly practice decomposing and recombining numbers using the nearest ten as a benchmark as they complete their solution using a number bond representation. Students verbalize the addends that make the nearest ten and then that ten and the remaining ones make a new number.

Student Learning Experiences / Tasks:
Problem sets
Exit tickets
Homework

Instructional Resources/Assessment (Mid and End of Module):

EngageNY http://www.engageny.org/resource/grade-1-mathematics-module-4

Vocabulary
Greater than
Less than
Equal to
Equal sign
Comparing

Digit
Place
Value
Tens
Ones
Ten and some more
Compose
Decompose
Sum
Difference
Equal
True
False
Unit
Group
Unknown
Addend
Part/part/whole
Mentally
Multiple of 10
Decade

Module 5 – Identifying, Composing, and Partitioning Shapes Domain(s): Geometry/ Measurement and Data Trimester(s): 3
Transfer: *Students will apply…*   1. Knowledge of partitioning shapes to telling time.   2. Knowledge of composing and decomposing shapes to create composite shapes.   **3.** Understanding of shapes and components to recognize and represent shapes in our world.
Understandings: *Students will understand that…*   1. Shapes are all around our world and can be put together or taken apart to form other shapes.   2. Time is measured in hours and minutes and can be shown on different kinds of clocks.   3. Objects can be sorted, described or built based on certain attributes.   4. Decomposing into more equal shares creates smaller shares.
Essential Question(s):   1. How are dividing a circle and telling time related?   2. How are shapes used in the real world?   3. How are shapes unique?   4. How is time measured?
Knowledge: *Students will know…*   1. Part-whole relationship of shapes.   2. Properties of shapes.
Skill: *Students will be able to do…*   1. Determine which attributes of a shape are defining compared to attributes that are non-defining using models or pictures. (1.G.1)   2. Build and draw shapes to possess defining attributes. (1.G.1)   3. Build two-dimensional composite shapes from other shapes (1.G.2)

4. Build three-dimensional composite shapes from other shapes. (1.G.2)
5. Divide circles and rectangles into two and four equal parts. Describe the pieces by using the words halves, fourths, and quarters. (1.G.3)
6. Put the pieces back together to make a whole. Describe the whole as 2 halves or 4 fourths. (1.G.3)
7. Recognize the difference between the hour hand and the minute hand. (1.MD.3)
8. Determine where the minute hand must be when the time is to the hour (o'clock). (1.MD.3)
9. Determine where the minute hand must be when the time is to the half hour (thirty). (1.MD.3)
10. Compare analog clocks to digital clocks and recognize the relationship between the two. (1.MD.3)
11. Count to 120 starting at any number less than 120 (1.NBT.1)
12. Read and write any number from 0-120 (1.NBT.1)
13. When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1)
14. Organize data with up to three categories in various ways. (1.MD.4)
15. Create a representation of data into a graph (1.MD.4)
16. Asking and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Clusters/Standards:
Focus Grade Level Standards

Tell and write time and money.

1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their values.

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. (Students do not need to learn formal names such as "right rectangular prism.")
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.

Common Core Practice Standards

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
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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:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

Student Learning Experiences / Tasks:
Problem sets
Exit tickets
Homework

Instructional Resources/Assessments (Mid and End of Module):

EngageNY http://www.engageny.org/resource/grade-1-mathematics-module-5

Vocabulary

Rectangular prism
2-dimensional
3-dimensional
Hour
Minute
Trapezoid
Half circle
Quarter circle
Halves
Fourths
Quarters
Half of
Fourth of
Quarter of
Equal shares
Triangle
Circle
Square
Rectangle
Hexagon
Cube
Sphere
Cone
Cylinder
Flat
Solid

Unit 6– Place Value, Comparison, Addition and Subtraction to 100
Domain(s): Operations and Algebraic Thinking/ Numbers and Operations base 10
Trimester(s): 3

Transfer: *Students will apply…*
2 Digit Place Value
1. Understanding of ten as a unit to analyze teens as ten and some ones.
2. Use modalities to build individual numbers with tens/ones while counting.
3. Quantity of numbers with materials, then bare numbers to compare two two-digit numbers using symbols (<,>,=).
4. Knowledge of counting sequence to understanding counting by 10s, identifying 10 more, 10 less.

Addition and Subtraction within 100

1. 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.

Understandings: *Students will understand that…*
2 Digit Place Value
1. A unit of 10 is made of 10 ones.
2. Two-digit numbers are composed of units of tens and some ones.
3. Numbers can be represented in different ways to demonstrate tens and ones in a two digit number.
4. The meaning of the comparison symbols (<,>,=)

Addition and Subtraction within 100
1. Two digit numbers are composed of groups of tens and some ones.
2. Decade numbers are groups or units of tens.
3. Commutative and Associative Properties demonstrate decomposing and representing numbers within equations.
4. Counting is connected to adding and subtracting.
5. Identification of 10 more/10 less is the same as adding or subtracting ten.
6. Addition can be used to solve subtraction.
7. Decomposing numbers so that the numbers can be recombined for a 10 or group of 10, and some more.

Essential Question(s):

2 Digit Place Value

1. What is significant about the teen numbers (related to 10)?
2. How is counting connected to quantity in a number?
3. How can the level of strategy you use indicate how much you know about place value?

Addition and Subtraction within 100

1. How do addition and subtraction relate to counting?
2. How does understanding properties of operations help me with strategies when I calculate? (See CCSS Page 90 Table 3)
3. How does using objects and drawings help me represent problems in multiple ways?
4. What do equations represent?

Knowledge: *Students will know…*

   2 Digit Place Value

1. Comparison symbols <, > and =

   Addition and Subtraction within 100

1. Decompositions of number within 10.
2. Strategies of near ten, doubles, doubles +1, +2.
3. Counting sequence to 120.

Skill: *Students will be able to do…*

2 Digit Place Value

1. Explain the value of each digit in a two digit number (1.NBT.2)
2. Identify a bundle of 10 ones as a "ten" (1.NBT.2)
3. Represent a 2 digit numeral using "tens" and "ones" (1.NBT.2)
4. Represent a 2 digit numeral ending in 0 (ranging from 10-90) using "tens" and 0 "ones" (1.NBT.2)
5. Describe number of tens and ones to determine value of number. (1.NBT.3)
6. 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)
7. Build and decompose numbers into tens and ones. (1.NBT.4)

8. Represent a problem situation involving addition of 2-digit numbers using any combination of words, numbers, physical objects, or symbols. (1.NBT.4)
9. Mentally add ten to a given 2-digit number on and off decade. (1.NBT.5)
10. Mentally take 10 from a given 2-digit number on and off decade. (1.NBT.5)
11. Explain how to find ten more or ten less than a given two-digit number. (1.NBT.5)
12. Relate the chosen strategy to a written method and explain the reasoning used. (1.NBT.6)
13. Count to 120 starting at any number less than 120 (1.NBT.1)
14. Read and write any number from 0-120 (1.NBT.1)
15. When given a set of objects (ranging from 0-120), represent the quantity with a written numeral (1.NBT.1)
16. Organize data with up to three categories in various ways. (1.MD.4)
17. Create a representation of data into a graph (1.MD.4)
18. Ask and answer quantity and comparison questions about the data represented in graphs or tables. (1.MD.4)

Addition and Subtraction within 100

1. Use concrete models or drawings and strategies to add within 100 and record using vertical and horizontal symbolic models. (1.NBT.4)
2. Use concrete models or drawings and strategies to subtract within 100 and record using vertical and horizontal symbolic models. (1.NBT.4)

☐ When given a set of objects (ranging from 0-120), represent the quantity with a written numeral

Clusters/Standards:

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."
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.

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 a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

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

1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Tell and write time and money.

1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their value.

Common Core Practice Standards

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

WIDA Standard:

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

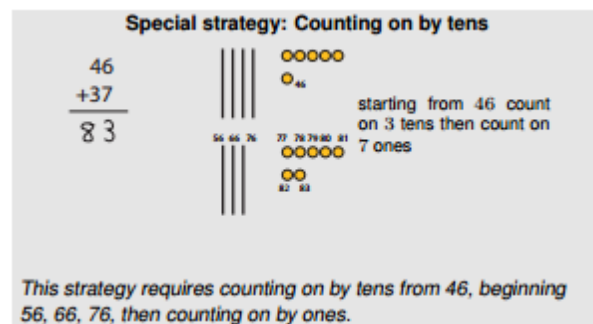English language learners would benefit from:

1. Teacher modeling the base 10 system using a 100 grid carpet (or a 100 grid made from a plastic tarp/tablecloth and tape) filled with number cards 1-100. The teacher can stand on a number and ask the class questions such as, "If I were to move to a number that was ten more or ten less, what number would I be standing on?" Once students are familiar with the location of the numbers on the grid, the number cards can be removed. Then, students repeatedly practice walking on the carpet to locate numbers, demonstrating their understanding of ten more and ten less without having to walk on (count) each number between each ten in order to locate a number. Students should verbalize that _____ is ten more than _____ , or _____ is ten less than _____.

2. Teacher modeling the use of base-ten blocks, unifix cube trains, or digi-blocks and a place value chart to add and subtract. Students repeatedly practice using manipulatives and the place value chart to represent addition situations concretely. In the situation shown, students would verbalize "46, 56, 66, 76, 77, 78, 79, 80, 81, 82, 83."

3. Teacher modeling the use of a floor number line to show how to find the unknown addend when solving subtraction equations. For example, to find the number that makes 10 when added to 8, have a student stand on the number 10 and hop back to 9 and then 8. Ask how many hops did it take? "I know that 10 – 8 = 2, because 2 + 8 = 10." Students repeatedly practice using number lines to represent and solve addition and subtraction situations.

Students should verbalize "I know _____ minus _____ equals _____ because_____plus_____equals _____."

Special strategy: Counting on by tens

46
+37
‾‾‾
83

starting from 46 count on 3 tens then count on 7 ones

This strategy requires counting on by tens from 46, beginning 56, 66, 76, then counting on by ones.

Student Learning Experiences / Tasks:

Problem sets
Exit tickets
Homework

Instructional Resources/Assessment (Mid and End of Module):

EngageNY http://www.engageny.org/resource/grade-1-mathematics-module-4

Vocabulary:

Greater than
Less than
Equal to
Equal sign
Comparing

Digit
Place
Value
Tens
Ones
Ten and some more
Compensation
Conceptual Place Value
Compose
Decompose
Sum
Difference
Equal
True
False
Unit
Group
Unknown
Addend
Part/part/whole
Mentally
Multiple of 10
Decade