GRADE TWO

MATHEMATICS	OPERATIONS AND ALGEBRAIC THINKING (ADDING & SUBTRACTING WITHIN 100 & FOUNDATIONS FOR MULTIPLICATION)
COMMON CORE STANDARDS	
2.OA.1, 2.OA.2, 2.OA.3, 2.OA.4	

KNOW	DO
(Factual)	*(Procedural, Application, Extended Thinking)*
Addition and subtraction are related operations. Subtraction can be perceived as an unknown addend problem. Addition and subtraction problems can be posed with the missing part being in different positions. Word problems may require one or two computations to find a solution. Mental strategies for adding single digit numbers to know combinations to 20 fluently (Doubles +1, Make a Ten, Ten plus…, 9+…) The objects in an even number set can be paired or broken into two equal groups, and an odd number set of objects cannot. Methods for recording addition & subtraction strategies using number lines & equations. Symbols can represent an unknown quantity in an equation. Rectangular arrays can represent the relationship between repeated addition and the foundations of multiplication	**Represent and solve problems involving addition and subtraction.** **1.** Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.1 **Add and subtract within 20. CC.2.OA.1** **2.** Fluently add and subtract within 20 using mental strategies.2 **Work with equal groups of objects to gain foundations for multiplication.** By end of Grade 2, know from memory all sums of two one-digit numbers. **CC.2.OA.2** **3.** Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. **CC.2.OA.3** **4.** Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **CC.2.OA.4** For example: 5+5+5=15 can be shown by a 3 x 5 rectangle. **CONNECTIONS TO OTHER DOMAINS and/or CLUSTERS:** **Reason with shapes and their attributes.** **Reason with shapes and their attributes.** 2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. CC.2.G.2 **Use place value understanding and properties of operations to add and subtract.** **5.** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **CC.2.NBT.5** **6.** Add up to four two-digit numbers using strategies based on place value and properties of operations. **CC.2.NBT.6** **9.** Explain why addition and subtraction strategies work, using place value and the properties of operations.3 **Relate addition and subtraction to length. CC.2.NBT.9** 5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. **CC.2.MD.5** **Work with time and money.** 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* **CC.2.MD.8** **Represent and interpret data.** 10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems4 using information presented in a bar graph. **CC.2.MD.10**
UNDERSTAND	
(Conceptual)	
There are multiple ways to represent and find sums / differences within 100 (story problems, pictures, equations, computational strategies, manipulatives, and arrays).	

GRADE TWO

MATHEMATICS	UNDERSTANDING PLACE VALUE
COMMON CORE STANDARDS	
2.NBT.1, 2.NBT.2, 2.NBT.3, 2.NBT.4	

KNOW	DO
(Factual)	*(Procedural, Application, Extended Thinking)*
The three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: **CC.2.NBT.1** a. 100 can be thought of as a bundle of ten tens – called a "hundred." **CC.2.NBT.1a** b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). **CC.2.NBT.1b** The repeating patterns of the counting sequence up to 1000. The meaning of recording symbols >,=,<.	**Understand place value.** **2.** Count within 1000; skip-count by 5s, 10s, and 100s. **CC.2.NBT.2** **3.** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. **CC.2.NBT.3** **4.** Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons. **CC.2.NBT.4** **CONNECTIONS TO OTHER DOMAINS and/or CLUSTERS** **Use place value understanding and properties of operations to add and subtract.** 7. Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **CC.2.NBT.7** 8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. **CC.2.NBT.8** 9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[5] **Work with time and money. CC.2.NBT.9** 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* **CC.2.MD.8**
UNDERSTAND	
(Conceptual)	
Three-digit numbers are composed of hundreds, tens, and ones.	

GRADE TWO

MATHEMATICS	ADDING AND SUBTRACTING WITHIN 1000 INCLUDING PLACE VALUE
COMMON CORE STANDARDS	
2.NBT.5, 2.NBT.6, 2.NBT.7, 2.NBT.8, 2.NBT.9	

KNOW	DO
(Factual)	*(Procedural, Application, Extended Thinking)*
The strategy of mentally adding and subtracting 10 or a 100 to a given number. Addition and subtraction are related operations. Commutative & associative properties of operations can be used to solve problems: For example students know that if 120 + 140 = 260, the 140 + 120 = 260 without actually naming the commutative property. Students know if 2 + 3 + 4 = 9 then they will know that 4 + 3 + 2 = 9 without actually naming the associative property. Place value strategies for adding & subtracting (counting on, making 10's/100's, breaking apart and putting together, and using known facts). Models for adding & subtracting (number line, base ten materials). Methods for recording addition & subtraction strategies using number lines & equations. Symbols can represent an unknown quantity in an equation.	**Use place value understanding and properties of operations to add and subtract.** **5.** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **CC.2.NBT.5** **6.** Add up to four two-digit numbers using strategies based on place value and properties of operations. **CC.2.NBT.6** **7.** Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **CC.2.NBT.7** **8.** Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. **CC.2.NBT.8** **9.** Explain why addition and subtraction strategies work, using place value and the properties of operations.[6] **CONNECTIONS TO OTHER DOMAINS and/or CLUSTERS: CC.2.NBT.9** **Relate addition and subtraction to length.** 5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. **CC.2.MD.5** 6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.**CC.2.MD.6** **Work with time and money.** 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* **CC.2.MD.8**
UNDERSTAND	
(Conceptual)	
Numbers can be composed & decomposed into place value parts to add and subtract multi-digit numbers efficiently.	

GRADE TWO

MATHEMATICS	MEASUREMENT (LENGTH, TIME, MONEY)
COMMON CORE STANDARDS	
2.MD.1, 2.MD.2, 2.MD.3, 2.MD.4, 2.MD.5, 2.MD.6, 2.MD.7, 2.MD.8	

KNOW	DO
(Factual)	*(Procedural, Application, Extended Thinking)*
The appropriate tool and unit of measure should be selected based on the context of the situation. Estimating strategies can be applied to measuring lengths to the closest standard unit of measure. Lengths of an object can be compared by using various units of measure. The value of the measurement of an object will be different depending on the size of the units used to measure it. (See example under #2) When you compare two lengths, you are finding the difference. Strategies used for solving & representing addition/subtraction problems can be utilized to solve and represent measurement word problems. (Word problems involving length, money , & time) Methods for recording addition & subtraction strategies using number lines & equations. Symbols can represent an unknown quantity in an equation. Consecutive whole numbers are equidistant on a number line. (0-10, 10-20, 20-30, etc.)	**Measure and estimate lengths in standard units.** 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. **CC.2.MD.1** 2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. **CC.2.MD.2** -If you measure an object using larger units, it will take fewer of those units than if you measure the object with a smaller sized unit. Ex: Measure an object using inches and cm. If it measures 12 inches, it takes 12 one-inch units to describe its length. The measurement in cm would be approximately 30cm which would be 30 one-cm units as its length. 3. Estimate lengths using units of inches, feet, centimeters, and meters. **CC.2.MD.3** 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. **CC.2.MD.4** **Relate addition and subtraction to length.** 5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. **CC.2.MD.5** 6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.**CC.2.MD.6** Utilize the number line as model for adding & subtracting within 100. **Work with time and money.** 7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. **CC.2.MD.7** 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* **CC.2.MD.8** **Connections to other Domains &/or Clusters:** **Represent and interpret data.** 9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. **CC.2.MD.9**
UNDERSTAND	
(Conceptual)	
Tools that measure length, time, & money must have equal intervals between units. (clocks, number lines, coins)	

<table>
<tr><th colspan="2">GRADE TWO</th></tr>
<tr><td>MATHEMATICS
COMMON CORE STANDARDS
2.MD.9, 2.MD.10</td><td>DATA (REPRESENT & INTERPRET)</td></tr>
<tr><td>KNOW</td><td>DO</td></tr>
<tr><td>(Factual)</td><td>(Procedural, Application, Extended Thinking)</td></tr>
<tr><td>Data can be organized and represented in multiple ways.

Data presented in graphs can be interpreted and manipulated to solve problems.</td><td rowspan="3">9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. CC.2.MD.9

Measure to the nearest in, ft, cm, m.

Construct line plots.

10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[7]

Interpret and manipulate data to solve problems. using information presented in a bar graph. CC.2.MD.10</td></tr>
<tr><td>UNDERSTAND
(Conceptual)</td></tr>
<tr><td>Data can be organized, represented, and interpreted in multiple ways for a variety of purposes.</td></tr>
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GRADE TWO

MATHEMATICS COMMON CORE STANDARDS 2.G.1, 2.G.2, 2.G.3	GEOMETRY -REASON WITH SHAPES & THEIR ATTRIBUTES
KNOW *(Factual)*	DO *(Procedural, Application, Extended Thinking)*
Angles and sides are important specified attributes of 2D shapes. (2.G.1) Faces, edges, & vertices are important specified attributes of 3D shapes. Distinguishing features of 2D and 3D shapes. Equal shares of identical wholes do not need to have the same shape. (Ex: ¼ of a square can look different for different equal squares) Rectangular arrays can represent the relationship between repeated addition and the foundations of multiplication	**Reason with shapes and their attributes.** 1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.8 Identify regular shapes Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. **CC.2.G.1** Compose shapes given the specified attributes. Distinguish between 2D & 3D shapes 2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. **CC.2.G.2** 3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. **CC.2.G.3** Ex: Students reason that two different shaped halves of identical wholes are each ½ because they are 1 of 2 equal pieces or they may prove that each ½ has the same area. (A sandwich cut on a diagonal vs. down the middle)
UNDERSTAND *(Conceptual)*	**Connections to other Domains &/or Clusters:** **Work with equal groups of objects to gain foundations for multiplication.** 4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends. **CC.2.OA.4** Utilize an array as a model for understanding equal groups. Repeated Addition (beginning Multiplication)
Shapes have defining attributes that can be utilized for comparing and composing/constructing. Rectangular arrays promote the connection between geometry and the foundations multiplication. Decomposing shapes into equal size pieces promotes the connection between geometry and fractional concepts.	