`

AERO/Common Core Mapping

K-2

Note: In yellow are the AERO Standards and inconsistencies between AERO and Common Core are noted by the strikethrough (~~xxx~~) notation.

Table of Contents

Critical Areas
K-2
instructional time should focus on these critical areas

Critical Area	K	1	2
Number Sense	Representing and comparing whole numbers, initially with sets of objects; ** **More learning time in Kindergarten should be devoted to number than to other topics.**	Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20;	Building fluency with addition and subtraction;
Place Value		Developing understanding of whole number relationships and place value, including grouping in tens and ones;	Extending understanding of base-ten notation;
Geometry	Describing shapes and space	Reasoning about attributes of, and composing and decomposing geometric shapes.	Describing and analyzing shapes.
Measurement		Developing understanding of linear measurement and measuring lengths as iterating length units;	Using standard units of measure;

Critical Areas Described

Kindergarten

1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Grade 1

1. Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., "making tens") to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

2. Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a

ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

3. Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry

4. Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.

Grade 2

1. Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

2. Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi- digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

3. Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades

4. Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

Standards for Mathematical Practices K-2

Mathematical Practices Mathematically proficient students....	K	1	2
Make Sense and Persevere in Solving Problems.	K.MP.1 Use both verbal and nonverbal means, these students begin to explain to themselves and others the meaning of a problem, look for ways to solve it, and determine if their thinking makes sense or if another strategy is needed.	1.MP.1 Explain to themselves the meaning of a problem and look for ways to solve it. May use concrete objects or pictures to help them conceptualize and solve problems. Are willing to try other approaches.	2.MP.1 Explain to themselves the meaning of a problem and look for ways to solve it. May use concrete objects or pictures to help them conceptualize and solve problems. Make conjectures about the solution and plan out a problem-solving approach.
Reason abstractly and quantitatively.	K.MP.2 Begin to use numerals to represent specific amount (quantity) Begin to draw pictures, manipulate objects, use diagrams or charts, etc. to express quantitative ideas such as a joining situation Begin to understand how symbols (+, -, =) are used to represent quantitative ideas in a written format.	1.MP.2 Recognize that a number represents a specific quantity. Connect the quantity to written symbols. Create a representation of a problem while attending to the meanings of the quantities.	2.MP.2 Recognize that a number represents a specific quantity. Connect the quantity to written symbols. Create a representation of a problem while attending to the meanings of the quantities. Begin to know and use different properties of operations and relate addition and subtraction to length.

Mathematical Practices Mathematically proficient students....	K	1	2
Construct viable arguments and critique the reasoning of others.	K.MP.3 Begin to clearly express, explain, organize and consolidate their math thinking using both verbal and written representations. Begin to learn how to express opinions, become skillful at listening to others, describe their reasoning and respond to others' thinking and reasoning. Begin to develop the ability to reason and analyze situations as they consider questions such as, *"Are you sure...?" , "Do you think that would happen all the time...?", and "I wonder why...?"*	1.MP.3 Construct arguments using concrete referents, such as objects, pictures, drawings, and actions. Explain their own thinking and listen to others' explanations. Decide if the explanations make sense and ask questions.	2.MP.3 Construct arguments using concrete referents, such as objects, pictures, drawings, and actions. Explain their own thinking and listen to others' explanations. Decide if the explanations make sense and ask appropriate questions.
Model with mathematics	K.MP.4 Begin to experiment with representing real-life problem situations in multiple ways such as with numbers, words (mathematical language), drawings, objects, acting out, charts, lists, and number sentences.	1.MP.4 Experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Connect the different representations and explain the connections.	2.MP.4 Experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Connect the different representations and explain the connections. Able to use all representations as needed.

Mathematical Practices Mathematically proficient students....	K	1	2
Use appropriate tools strategically.	K.MP.5 Begin to explore various tools and use them to investigate mathematical concepts. Through multiple opportunities to examine materials Experiment and use both concrete materials *(e.g. 3- dimensional solids, connecting cubes, ten frames, number balances*) and technological materials (e.g., virtual manipulatives, calculators, interactive websites) to explore mathematical concepts.	1.MP.5 Decide when certain tools might be helpful when solving a mathematical problem. *For example , first graders decide it might be best to use colored chips to model an addition problem.*	2.MP.5 Consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. *For example, second graders may decide to solve a problem by drawing a picture rather than writing an equation.*
Attend to precision	K.MP.6 Begin to express their ideas and reasoning using words. Begin to describe their actions and strategies more clearly, understand and use grade-level appropriate vocabulary accurately, and begin to give precise explanations and reasoning regarding their process of finding solutions.	1.MP.6 Use clear and precise language in their discussions with others and when they explain their own reasoning.	2.MP.6 Use clear and precise language in their discussions with others Explain their own reasoning.

Mathematical Practices Mathematically proficient students....	K	1	2
Look for and make use of structure	K.MP.7 Begin to look for patterns and structures in the number system and other areas of mathematics.	1.MP.7 Begin to discern a pattern or structure. For example, if students recognize 12 + 3 = 15, then they also know 3 + 12 = 15. (Commutative property of addition.) To add 4 + 6 + 4, the first two numbers can be added to make a ten, so 4 + 6 + 4 = 10 + 4 = 14.	2.MP.7 Look for patterns. For example , they adopt mental math strategies based on patterns (making ten, fact families, doubles).
Look for and express regularity in repeated reasoning.	K.MP.8 Begin to notice repetitive actions in geometry, counting, comparing, etc.	1.MP.8 Notice repetitive actions in counting and computation, etc. Continually check their work by asking themselves, "Does this make sense?"	2.MP.8 Notice repetitive actions in counting and computation, etc. They look for shortcuts, when adding and subtracting, such as rounding up and then adjusting the answer to compensate for the rounding. Continually check their work by asking themselves, "Does this make sense?"

AERO Performance Indicators Mapped to Common Core Standards
K-2

Clusters	K	1	2
Rote counting	K.CC.1 Count to 100 by ones and tens Count forward by 1's and tens to 100 ~~and backward~~ from ~~100~~ with and without objects	1.NBT.1 Count to 120, starting at any number less than 120. 1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). Count forward by 1's to 120, with and without objects and starting with any number less than 120, and count by two's-to at least ~~100~~	2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s. Count by fives, tens and hundreds starting at any number from 1 to 999 Use number patterns to skip count by 2's, ~~3's,~~ 5's, and 10's
Counting on	K.CC.2 Count forward beginning from a given number within the known sequence Count forward by 1's and tens to 100 ~~and backward~~ from ~~100~~ with and without objects	1.NBT.1 Count to 120, starting at any number less than 120. Count forward by 1's to 120, with and without objects and starting with any number less than 120, and count by two's-to at least ~~100~~	2.NBT.2 Count within 1000 Count by fives, tens and hundreds starting at any number from 1 to 999
Writing numbers	K.CC.3 Write numbers 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). Identify, write, and read aloud numbers from 0 ~~to at least 31~~ Use a number line or chart to locate and identify the numbers ~~(from 1 to 100)~~ coming before/after a given number and between 2 given numbers	1.NBT.1 In this range (to 120), read and write numerals and represent a number of objects with a written numeral. Identify, read aloud and write numbers to ~~100~~	2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. Identify, read aloud and write numbers to 1000 \

Clusters	K	1	2
Ordinal Numbers	~~Use ordinal numbers 1st – 20th to identify position in a sequence~~	~~Use ordinal numbers 1st – 20th to identify position in a sequence~~	~~Use ordinal numbers through 31st as they relate to the calendar~~
Counting objects (!:1 correspondence)	K.CC.4 (ABC) Understand the relationship between numbers and quantities; connect counting to cardinality. K.CC.5 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. Count how many objects are in a set of up to 20 objects and count out a specific number of objects (up to 20) from a larger set. Identify and create, compare and describe sets of objects as more, less or equal	~~Estimate the number of objects in a group of 100 or less and count to evaluate reasonableness of estimate.~~ ~~Create, compare, and describe sets of objects as greater than, less than, or equal to~~	
Equality/ comparing	K.CC.6 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 K.CC.7 Compare two numbers between 1 and 10 presented as written numerals Compare two sets of up to 20 objects each and explain why the number of objects in one set is equal to, greater than, or less than the number of objects in the other set. Estimate the number of objects in a group of 20 or less and count to evaluate reasonableness of estimation.	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 <. Write, compare, and order numbers to at least ~~100~~ using the words equal to, greater than, less than, greatest, and least and recording the results of comparisons with the symbols >, =, and <. When appropriate Use a number line or chart, locate, compare, and order whole numbers less than ~~100~~ and identify the numbers coming before/after a given number and between 2 given numbers	2.NBT.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. Compare and order numbers from 0 to at least 1,000 using the words equal to, greater than, less than, greatest, or least and recording the results of comparisons with the symbols >, =, and <. when appropriate

Clusters	K	1	2
Place Value	K.NBT.1 Compose and decompose numbers from 11 to 19 into ones and tens and further ones e.g. using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. Identify place value of each digit utilizing standard and expanded form through 20.	1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Construct models and identify place value of each digit utilizing standard and expanded form through 99	2.NBT.1. Understand that 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. Construct models and identify place value of each digit utilizing standard and expanded form through 999.
Composing and Decomposing (using place value to add and subtract)	K.OA.3 Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1 Use concrete objects to model simple joining and separating situations (addition and subtraction) of whole numbers related to sums of 10 or less and write corresponding number sentence.	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. Using concrete models or drawings and strategies based on place value, add within 100, including adding a two-digit number and a one-digit number.	2.NBT.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. 2.NBT.6. Add up to four two-digit numbers using strategies based on place value and properties of operations. Demonstrate efficient procedures for adding and subtracting 2 and 3 digit whole numbers and explain why the procedures work on the basis of place value and number properties

Clusters	K	1	2
Mental Addition /Subtraction		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. Given ~~a number and number line/hundreds chart~~, identify the nearest ten 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. Identify, describe, and explain the patterns in repeating situations (adding the same number, ~~e.g., 2, 5, 8, 11~~, or skip-counting)	2.NBT.8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900 Name the number that is 1 more than or 10 more than any number from 0 through 999 and 1 less than or 10 less than any number from 10 through 1000 Carry out addition and subtraction mentally involving: 3-digit numbers and ones; 3-digit numbers and tens; 3-digit numbers and hundreds
Representing Addition/Subtraction	K.OA.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem ~~Create~~ grade –appropriate story picture and story problems, solve using a variety of strategies, present and justify results Use drawings and labels to record solutions of addition and subtraction problems with answers less than or equal to 10	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. Solve and create a story problem that matches an addition or subtraction expression or equation using physical objects, pictures, or word Select and/or write number sentences to find the unknown in problem- solving contexts involving single-digit addition and subtraction using appropriate labels	2.OA.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. Select and/or write number sentences to find the unknown in problem-solving contexts involving two-digit addition and subtraction using appropriate labels Model, explain, and identify missing operations and missing numbers in open number sentences including number facts in addition and subtraction

Clusters	K	1	2
Representing Addition/Subtraction	K.OA.1 Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. Use concrete objects to model simple joining and separating situations (addition and subtraction) of whole numbers related to sums of 10 or less and write corresponding number sentence.	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 Model situations and solve equations that require addition and subtraction of whole numbers; use objects, pictures, and symbols	2.MD.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. 2.MD.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. Represent mathematical situations using numbers, symbols, and words and complete number sentences with the appropriate words and symbols (+, -, =) Model situations and solve equations that involve the addition and subtraction of whole numbers

Clusters	K	1	2
Relationship between addition and subtraction		1.OA.3 Apply properties of operations as strategies to add and subtract. Examples: (Commutative and Associative property of addition.) 1.OA.4. Understand subtraction as an unknown-addend problem. Use the concept of commutative, associative and identity properties of addition to solve problems involving basic facts. Formulate, explain, and generalize patterns within and across addition and subtraction. Use movement on the number line to demonstrate the inverse relationship between addition and subtraction	2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations. Model and justify the relationship between addition and subtraction (e.g., identity element of addition, associative property, commutative property, inverse operations, fact families).
Addition/Subtraction Equations	K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation Model meanings of operations and the relationship between addition and subtraction (~~e.g., identity element of addition, commutative property~~) using manipulatives	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? 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 = _. Recognizes symbol represents missing value Uses vocabulary/symbols for + - =	

Clusters	K	1	2
Fluency/ facts	K.OA.5 Fluently add/sub within 5 using equations	1.OA.6 Add and subtract within 20, demonstrating **fluency for addition and subtraction within 10.** Apply strategies, including counting on, counting back, and doubling, for addition facts to at least 10 Recall from memory single digit addition facts ~~(to 9 + 9)~~ and the corresponding subtraction facts	2.OA.2 Fluently add and subtract within 20 **using mental strategies**. **By end of Grade 2, know from memory all sums of two one-digit numbers.** 2.NBT.5. Fluently add and subtract within 100 **using strategies based on place value, properties of operations**, and/or the relationship between addition and subtraction. Demonstrate efficient procedures for adding and subtracting 2 and 3 digit whole numbers and explain why the procedures work on the basis of place value and number properties
Multiplicative reasoning		1.OA.5 Relate counting to adding, e.g., counting by 2s means adding 2 each time ~~Identify odd and even numbers to 20 and determine if a set of objects has an odd or even number of elements.~~	2.OA.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. Demonstrate the relationships between odd and even numbers in addition and subtraction such as, odd + odd = even or odd – even = odd 2.OA.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. Model, represent, and explain multiplication (products to 81) as a rectangular array , as repeated addition and skip counting, or as equal-sized moves on the number line and

			division as repeated subtraction, sharing and grouping 2.G.2 Model, represent, and explain multiplication (products to 81) as a rectangular array , as repeated addition and skip counting, or as equal-sized moves on the number line and division as repeated subtraction, sharing and grouping Use non-standard units to cover a given region

Clusters	K	1	2
Fractions	~~Identify and name halves, thirds, and fourths as part of a whole and as part of a group using models~~	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 Identify and name halves, ~~thirds~~, and fourths as part of a whole and as part of a group using models \	2.G.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. Represent fractions that have denominators ranging from 2 ~~to 12~~ using physical objects, pictures, numbers, and words, and translate among representations Identify that when all fractional parts are included, such as four-fourths, the result is equal to the whole and to one. Compare and order fractions by using models, benchmarks (0, 1⁄2, 1), or common numerators or denominators ~~Distinguish the equivalency among decimals, fractions and percents (e.g., half = 50%).~~

Clusters	K	1	2
Measurement	K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object Identify and describe measurable attributes, such as length, weight, and ~~capacity~~, and use these attributes to make direct comparisons. ~~Measure length with non-standard units; e.g., paper clips, cubes~~	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. Use a variety of non-standard units to measure length Estimate and verify by measuring, length, ~~weight, and capacity~~ using nonstandard units (e.g., sticks, paper clips, blocks, beans) ~~Identify the appropriate tool used to measure length (i.e., ruler), weight (i.e., scale), time(i.e., clock, calendar) and temperature (i.e.thermometer)~~	2.MD.1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardstick, meter stick, or measuring tapes. 2.MD.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. Select and use appropriate tools and units to measure length, time, ~~capacity, and weight~~ (e.g.~~, scales for kilograms~~; rulers for centimeters; ~~measuring containers for cup, and liters~~) ~~thermometer in degrees Celsius~~ Select the appropriate units for measuring time, length, ~~weight, and temperature~~
Comparing Measurements	K.MD.2 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. For example, directly compare the heights of two children and describe one child as taller/shorter. Determine and describe comparisons of length (longer, shorter, the same), mass (heavier, lighter, the same), and ~~capacity~~ (holds more, less, or about the same) using different-shaped or congruent containers, objects or figures.	1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object. Compare, order, describe, and represent objects by length ~~and weight~~ Compare and order given lengths, ~~capacities, weights, or temperatures~~ that are expressed in the same unit of measure	2.MD.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. 2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters. Compare, order, and describe objects by various measurable attributes for length, ~~weight, and temperature~~

Clusters	K	1	2
Probability	~~Use chance devices like spinners and dice to explore concepts of probability and use tallies to record results in a table, make predictions (More likely, less likely, equally likely) based on results~~		~~Conduct simple experiments with more than two outcomes and use the data to predict which event is more, less, or equally likely to occur if the experiment is repeated.~~
Data	K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count (than or equal to 10). Sort objects into groups in one or more ways and identify which attribute was used to sort (size, shape, and color). Describe data by using mathematical language such as more than, less than, etc ~~Collect and organize data by counting and using tally marks and other symbols~~ ~~Identify a real life situation to gather data over time;~~	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. ~~Gather~~ data and represent data using tallies, tables, ~~picture graphs, and bar type graphs~~ Analyze and interpret data by using mathematical language such as more than, less than, etc ~~Conduct simple experiments~~, record data on a tally chart or table and use the data to predict which of the events is more likely or less likely to occur if the experiment is repeated. ~~Identify a real life situation to gather data over time;~~	2.MD.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 2.MD.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 using information presented in a bar graph. (Note: See Appendix, Table 1 CC.) Use tables, pictographs, and bar graphs to represent data Interpret data presented in ~~circle,~~ line, and bar graphs and answer questions about the displayed situation. Identify real life situations to gather data over time ~~Use ordered pairs to identify the locations of points in a grid; e.g., A-10 on a map~~

Clusters	K	1	2
Time		1.MD.3 Tell and write time in hours and half-hours using analog and digital clocks.	2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
	~~Tell time to the hour using digital and analog clocks~~	Tell time to the hour and half-hour using digital and analog clocks	Tell time to the nearest quarter hour and 5 minute interval using digital and analog clocks
			~~Use elapsed time in one hour increments, beginning on the hour, to determine start, end, and elapsed time~~
	~~Name in order the days of the week~~	~~Name in order the months of the year and use the calendar to identify days, weeks, months, and a year~~	~~Recognize that there are 12 months in 1 year, 7 days in 1 week, and 24 hours in 1 day~~
	~~Sequence events; and identify calendars and clocks as objects that measure time~~	~~Sequence events with respect to time; e.g. yesterday, today, tomorrow, seasons~~	
	~~Put events in a logical sequence~~	~~Identify what comes next in a step by step story or event sequence~~	
Money			2.MD.8 . Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.
			Determine the value of a given set of coins
	~~Identify and sort coins of the host country~~	~~Find the value of any set of coins using one denomination of coins~~	~~Use decimals to show money amounts~~

Clusters	K	1	2
Geometry (Shapes and their attributes)	K.G.2 Correctly name shapes regardless of their orientations or overall size. (circle, square, rectangle, triangle, hexagon, trapezoid, cube) K.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid"). K.G.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. Identify two-dimensional shapes , i.e., circle, triangle, rectangles, and squares, regardless of size or orientation Identify three-dimensional figures in the environment	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. Name, ~~sort, and sketch~~ two-dimensional shapes (circles, triangles, rectangles including squares) regardless of orientation Identify, name, and describe three-dimensional objects i.e. cubes and spheres, regardless of size or orientation Sort and classify objects by one or two attributes in more than one way ~~Create and explain patterns using concrete objects, numbers, shapes, and colors~~	2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.[1] Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. Sort, classify, and label objects by three or more attributes in more than one way including color, size, shape, and thickness Identify, classify, and sort basic geometric figures by shape, size, and geometric attributes. E.g. cube, ~~sphere, and cylinder, prism, pyramid, and cone.~~ Describe, sketch, and compare two-dimensional shapes (rhombus, square, triangle, trapezoid, rectangle, pentagon, hexagon, ~~octagon, and decagon~~) regardless of orientation. Identify congruent and similar shapes (circles, triangles, and rectangles including squares) Compare and contrast the attribute changes over time in two or more qualities Predict the results of combining and subdividing polygons and ~~circles~~

Clusters	K	1	2
Geometry (Shapes /position)	K.G.1 Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to. Use relative position words including before/after. far/near, and over/under to place objects Describe the location of one object relative to another object using words such as in, out, over, under, above, below, between, next to, behind, and in front of.	~~Use position words down/up, left/right, top/bottom, and between/middle to describe the relative location of objects~~ ~~Use the positional and directional terms north, south, east, and west to describe location and movement~~ ~~Use the directional words left, and right to describe movement.~~	~~Use the positional and directional terms north, south, east, and west to describe location and movement.~~
Geometry (Compose/Decompose shapes)	K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). K.G.6 Compose simple shapes to form larger shapes	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 Compose and decompose common two dimensional figures.	

Table 1. Common addition and subtraction situations.

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? 2+ 3= ?	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? 2 + ?= 5	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? ?+ 3 = 5
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? 5–2= ?	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? 5 – ?= 3	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? ?– 2 = 3
	Total Unknown	**Addend Unknown**	**Both Addends Unknown[1]**
Put Together / Take Apart[2]	Three red apples and two green apples are on the table. How many apples are on the table? 3+ 2= ?	Five apples are on the table. Three are red and the rest are green. How many apples are green? 3 + ? = 5, 5 – 3 = ?	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 5 = 0 + 5, 5 = 5 + 0 5 = 1 + 4, 5 = 4 + 1 5 = 2 + 3, 5 = 3 + 2

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[3]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? 2 + ? = 5, 5 – 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? 2 + 3 = ?, 3 + 2 = ?	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

[1]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.

[2] Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.

[3] For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.