FCPS – 2ND GRADE STANDARDS TRAJECTORY MAP – KAS & INVESTIGATIONS3

FCPS Priorities for Mathematics Classrooms, K-12

Priority 1: Curriculum – All teachers consistently use the district adopted curriculum and make instructional decisions about how to use it in a way that aligns with the vision for excellent math instruction.

Priority 2: Student Thinking and Discussion – All students are responsible for doing the thinking and participating in academic discussions during each lesson.

Priority 3: Appropriate Balance of Rigor – All math lessons incorporate an appropriate balance of conceptual understanding, procedural skills and fluency, and application (as determined by the target standards).

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Common Core Standards	1st Quarter August, Sept., Oct. Units 1 & 2	2nd Quarter Nov., Dec. Unit 3	3rd Quarter Jan., Feb., March Units 4, 5 & 6	4th Quarter April, May Units 7 & 8
Operations and Algebraic Thinking				
Cluster: Represent and solve problems involving addition and subtraction.				
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. (Note: See Glossary, Table 1.)	• I can solve comparison story problems with the difference unknown. • I can solve put together/take apart story problems with the total unknown. • I can solve add to and take from story problems with the result unknown. ***Within 30**	• I can solve put together/take apart story problems with both addends unknown, and find all possible combinations. • I can solve put together/take apart story problems with one addend unknown. • I can solve story problems with an unknown change. • I can solve story problems with an unknown start.	• I can solve two-step story problems that involves finding the difference between a 2-digit number and 100. • I can solve comparison story problems with a bigger unknown.	• I can solve comparison story problems with a smaller unknown.
Cluster: Add and subtract within 20.				
2.OA.2: Fluently add and subtract within 20 using mental strategies. [2]By end of Grade 2, know from memory all sums of two one-digit numbers. [2] See standard 1.OA.6 for a list of mental strategies.	• I can use known combinations to add several numbers in any order. •	•	•	• I can fluently subtract 2-digit numbers.

Cluster: Work with equal groups of objects to gain foundations for multiplication				
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.	•	•	•	• I can explain even and odd numbers in terms of numbers that can/cannot be organized into groups of two or two equal groups. • I can write an equation to express an even number as a sum of two equal addends. • I can solve problems that involve equal groups.
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.	•	•	•	• I can write an addition equation to express the total number of objects in a rectangular array.
Number and Operations in Base Ten				
Cluster: Understand place value				
2.NBT.A.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. Understand the following as special cases:				
a. 100 can be thought of as a bundle of ten tens — called a "hundred."	•	• I can explain that 100 can be one group of 100, as ten groups of 10 ones, or as 100 ones.	•	•
b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900	•	• I can explain that multiples of 100 (e.g.,	•	•

refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).		200, 300, 400, etc.) are made up of a number of groups (2, 3, 4, etc.) of hundreds with 0 tens and ones.		
2.NBT.A.2: Count within 1000; skip-count by 5s, 10s, and 100s.	•	•	• I can count to 1000. • I can count by 5s within 1000. • I can count by 10s within 1000. • I can count by 10s off decuple (e.g., 34, 44, 554, etc.) within 1000. • I can count by 100s within 1000. • I can count by 100s off centuple (e.g., 267, 367, 467, etc.) within 1000.	•
2.NBT.A.3: Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	•	•	• I can read numbers to 1000. • I can write numbers to 1000.	•
2.NBT.A.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.	•	•	• I can explain that 3-digit numbers represent amounts of hundreds, tens, and ones. • I can compare numbers within 1000 using the symbols >, =, < to record the results.	•
Cluster: Use place value understanding and properties of operations to add and subtract.				
2.NBT.B.5 – Fluently add and subtract within 100 using strategies based on place	•	• *I can solve put together/take apart story problems with both addends unknown, and*	• Add fluently within 100.	• Fluently subtract 2-digit numbers.

value, properties of operations, and/or the relationship between addition and subtraction.		*find all possible combinations.* • *I can solve put together/take apart story problems with one addend unknown.* • *I can solve story problems with an unknown change.* • *I can solve story problems with an unknown start.* •	• *I can solve two-step story problems that involves finding the difference between a 2-digit number and 100.* • *I can solve comparison story problems with a bigger unknown.*	• *I can solve comparison story problems with a smaller unknown.*
2.NBT.B.6 – Add up to four two-digit numbers using strategies based on place value and properties of operations.	•	• I can solve two-step story problems about money.	•	•
2.NBT.B.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.	•	•	•	• I can represent and solve addition and subtraction problems with 3-digit numbers.
2.NBT.B.8 – Mentally find 10 or 100 to a given number 100 – 900, and mentally subtract 10 or 100 from a given number 100-900. Explain the reasoning used.	•	•	• I can add 10 or 100 to numbers within 1000. • I can subtract 10 or 100 from numbers within 1000.	•

			•	
2.NBT.B.9. Explain why addition and subtraction strategies work, using place value and the properties of operations. [1] [1] Explanations may be supported by drawings or objects.	• I can use known combinations to add several numbers in any order. • I can explain my strategy for solving and addition or subtraction story problem and tell why it works.	• I can explain my strategy for solving and addition or subtraction story problem and tell why it works.	• I can explain my strategy for solving and addition or subtraction story problem and tell why it works.	• I can use mental math to solve addition and subtraction problems and explain my thinking. • I can explain my strategy for solving and addition or subtraction story problem and tell why it works.
Measurement and Data				
Cluster: Measure and estimate lengths in standard units.				
2.MD.1 – Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	•	•	• I can measure lengths in inches, feet, centimeters, and meters. • I can choose the tool that is appropriate for the item being measured.	•
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.	•	•	• I can explain how different tools will result in different measurement counts.	•
2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters.	•	•	• I can estimate lengths in inches, feet, centimeters, and meters.	•
2.MD.4. Measure to determine how much longer one object	•	•	• I can measure to determine how much	•

is than another, expressing the length difference in terms of a standard length unit.			longer one object is than another. • I can write my responses using standard units.	
Cluster: Relate addition and subtraction to length.				
2.MD.B.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	•	•	• I can solve comparison and other story problems about lengths by using drawings and equations. • I can write the equations with a symbol for the unknown to represent the problem.	•
2.MD.B.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.	• I can create a number line 0 to 100.	• I can use an empty number line to model my strategy for addition or subtraction within 100.	• I can use an empty number line to model my strategy for addition or subtraction within 100.	• I can use an empty number line to model my strategy for addition or subtraction within 100.
Cluster: Work with time and money.				
2.MD.C.7 – Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	•	•	•	• I can name, notate, and tell time to the nearest 5 minutes using analog and digital formats. • I can associate A.M. & P.M. with time of day.

2.MD.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?*	• I can recognize and identify coins and their values. •	• I can solve two-step story problems involving money. •	• I can solve a two-step story problem that involves finding the difference between a 2-digit number and 100 ($1.00).	•
Cluster: Represent and interpret data.				
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.	•	•	• I can order, represent, and describe a set of numerical data. • I can represent measurement data on a line plot.	•
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 [1] using information presented in a bar graph. [1] See Glossary, Table 1.	•	•	• I can organize a set of data into up to four categories. • I can create, describe, and interpret a variety of data representations, including picture graphs and bar graphs. • I can order, represent, and describe a set of numerical data.	•

			• I can solve simple story problems using information presented in a bar graph.	
Geometry				
Cluster: Reason with shapes and their attributes.				
2.G.1 – 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. [1] Sizes are compared directly or visually, not compared by measuring.	• I can define the attributes of 2-D and 3-D shapes (number and shape of faces, number and length of sides, number of angles and vertices) and draw shapes with those attributes. • I can make a rectangle out of same size squares and specify the number of rows and the number of squares in each row.	•	•	•
2.G.2 – 2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	• I can partition a rectangle into the same size squares and specify the number of rows and the number of squares in each row.	•	•	•
2.G.3 – 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	•	•	• I can partition circles and rectangles into equal shares of 2, 3, or 4, and describe those shares as halves, thirds or quarters. • I can describe the whole partitioned	•

that equal shares of identical wholes need not have the same shape.			shape as "two halves" or "three thirds". • I can explain how equal shares may not have the same shape.	
	•	•	•	•

Appendix A

Appendix A: Tables

Table 1

Common Addition and Subtraction Situations[1]

	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[3]**
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[4]	**("How many more?" version):** Lucy has two apples. Julie has five apples. How many more apples does Lucy have than Julie? **("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 three 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 three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? 5 – 3 = ?, ? + 3 = 5

Blue shading indicates the four Kindergarten problem subtypes. Students in grades 1 and 2 work with all subtypes and variants (blue and green). Yellow indicates problems that are the difficult four problem subtypes students in grade 1 work with but do not need to master until grade 2.

[1] Adapted from Box 2-4 of National Research Council (2009, op. cit., pp. 32, 33).

[2] 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*.

[3] 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.

[4] 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.