KY Math Standards 1st grade   FCPS 1st Grade Trajectory   1st Unit 4 Google Link   First grade Priority Content

Unit Title: Make it Big! Bigger Numbers, Bigger Shapes, and Bigger Story Problems!	Estimated Time Frame: 40-55 days

Essential Standards: 1.OA.1, 1.OA.6, 1.OA.7, 1.OA.8, 1.NBT.1, 1.NBT.2, 1.NBT.3, 1.NBT.4, 1.NBT.5, 1.NBT.6, 1.MD.3, 1.G.2, 1.G.3 Supporting Standards: 1.OA.2, 1.OA.5, 1.MD.4, 1.G.1

Big Idea(s) CRA explanations for 1st grade Unit 4

NUMBERS: The set of real numbers is infinite and each real number can be associated with a unique point on the number line.

OPERATION, MEANINGS AND RELATIONSHIPS: Understanding, representing and solving problems involving addition and subtraction. Understanding equivalence and quantitative, conceptual base ten relationships.   Students develop from the need to count by 1's to build a ten, to the understanding of knowing a "group of ten" (1.NBT.2)

Essential Questions:	Common Misconceptions:
How are addition and subtraction related? How can numbers be put together and taken apart to solve problems? How can the answer to one problem be used as information needed to solve another problem? How do you use time in your daily life? How do you make equal shares and why is it important?	- Expressions vs. equations (1.OA.7) - Forward/backward counting confusion (1.OA.6, 1.NBT.1) - Fluency includes all numbers *within* 10, not just to 10 (1.OA.6) - Counting on to/back from a number builds from the quantity of a number (ex. We don't just "put the big number in your head") (1.OA.6) - When counting forward/backward, crossing the decuple poses a challenge (ex. 31, 30, 29 - going from 30's to 20's and vice versa) (1.NBT.1) - Numeral and digit reversals (ex. 17/71, 12/20) (1.NBT.1) - Directionality of the symbols <, > (1.NBT.3) - When comparing bare numbers, students not understanding the true quantity (1.NBT.3) - Measurement Confusion: not understanding correct measurement strategies, not using non-standard units appropriately (lining up end-to-end, etc.…) (1.MD.1, 1.MD.2) - Squares cannot be rectangles (1.G.1) - Confusion in composing shapes multiple ways (1.G.1, 1.G.2)

Standards for Mathematical Practice (**bolded** practices are emphasized in this unit)	Kentucky Interdisciplinary Literacy Practices	
MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. **MP.3. Construct viable arguments and critique the reasoning of others.** MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. **MP.7. Look for and make use of structure.** MP.8. Look for and express regularity in repeated reasoning.	1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schema to understand and create text. 3. View literacy experiences as transactional, interdisciplinary and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. 5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks. **6. Collaborate with others to create new meaning.** **7. Utilize digital resources to learn and share with others.** **8. Engage in specialized, discipline specific literacy practices.** **9. Apply high level cognitive processes to think deeply and critically about text.** 10. Develop a literacy identity that promotes lifelong learning.	
Essential Standards: **KAS Content Standards** **CRA explanations for 1st grade Unit 4**	**Prerequisite Skills &** **Essential Vocabulary**	**Sample Learning Intentions* &** **Sample Success Criteria***
KY.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._ Students flexibly model or represent addition and subtraction situations or context problems (involving sums and differences up to 20). **See Table 1 in Appendix A**. Note: Drawings need not show detail, but accurately represent the quantities involved in the task. 1.MD.4 Coherence K.OA.2→ 1.OA.1→ 2.OA.1	Story problems (add to, take from) within 10 using objects or drawings. ● add to ● take from ● put together ● take apart ● equal ● addition ● subtraction	I am learning to solve word problems. I know I am successful when: ● I can tell when I need to add or subtract to solve a word problem. ● I can model the story and solve a problem situation within 20 verbally or with materials.

End Goal in Quarter 4: **Solve word problems by adding and subtracting within 20 with unknowns in all positions.** **Suggested progression for the year, not intended to go through all these in one unit: see chart** 1. numberless word problems 2. Add to/Take from with result unknown 3. Put together, take apart with result unknown 4. Put together, take apart with addend unknown 5. Add to, take from with change unknown 6. Comparison problems with difference unknown **7. Put together, take apart with both addends unknown** **8. Comparison problems with bigger unknown, then smaller unknown** **9. Add to, take from with start unknown** **10. Comparison problems with bigger unknown, then smaller unknown**		● I can model the story and solve a problem situation up to 20 by drawing or writing an equation to represent the situation.

KY.1.OA.6 Add and subtract within 20.
  a. Fluently add and subtract within 10. (finger patterns to 10, Subitizing numbers through 10, Partition numbers 5-10, Small doubles, subtracting small doubles (8-4, 6-3))
  b. 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 a 10; using the relationship between addition and subtraction; creating equivalent but easier or known sums.
Coherence KY.K.OA.2→KY.1.OA.6→KY.2.OA.2
	Fluently add and subtract within 5.
	
	Decompose numbers less than or equal to 10.
	
	● large doubles
	● number line
	● sums
	● strategies
	● fluency
	● decompose
	● add
	● subtract
		I am learning to mentally add and subtract.
		
		I know I am successful when:
		● I can tell the missing part of a number within 10. (Ex. I have 3, how many do I need to make 7?, etc…)
		● I can use large doubles and ten-plus to solve problems.
		● I can add within 20 using a variety of mental strategies.

End goal in Unit 4: Add and subtract to 20 using large doubles and ten-plus and subtracting large doubles (18-9, 14-7) and ten-minus (18-10 or 18-8) **WITH VISUALS/MATERIALS**. Fluency is an ongoing process that will take much of the year to reach. **Suggested Progression:** **1. Addition/subtraction to 10:** • finger patterns to 10 • Subitizing numbers through 10 • Partition numbers 6-10 • Small doubles • 5-plus and partitions of 5 • subtracting small doubles (8-4, 6-3) **2. Addition/subtraction to 20:** • Large doubles (6+6) • Ten-plus • Larger 5-plus sums • subtracting large doubles (12-6, 14-7) • subtracting differences that equal ten or minus ten (18-10 or 18-8) • subtracting 5 (13-5) • Near doubles (doubles +/-1) • Addend in range of 6 to 9 with addends in range 1 to 4 • Subtracting near doubles (13-7) • Subtrahends within 20- subtrahends within 4 (18-4, 17-3) • two addends in range of 6 to 9 • All facts to 20 mastered • Subtrahends within 20- subtrahends within 20 (20-11, 18-6)		• I can subtract within 20 using a variety of mental strategies. • I can apply what I know about numbers within 10 to add/subtract within 20.

KY.1.OA.7 Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. Students determine which of the following equations are true and which are false: $6 = 6$, $7 = 8 – 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$. Coherence KY.1.OA.7→KY.2.OA.4	● equal sign ● expression ● equation ● true/false ● balanced/ unbalanced	I am learning to gain meaning from (addition/ subtraction) expressions. I know I am successful when: ● I can explain the meaning of the equal sign. ● I can determine if a problem is true or false.
KY.1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. (Within 20) **End goal in Unit 4:** Students determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = ? – 3$, $6 + 6 = \_\_$. KY.1.OA.7 Coherence KY.1.OA.8	● unknown ● missing number ● addition ● subtraction ● determine ● explain ● solve ● relationship	I am learning to solve problems with an unknown number. I know I am successful when: ● I can determine the unknown in an addition problem. ● I can determine the unknown in a subtraction problem. ● I can explain the relationship of the three numbers used to solve the problem.

KY.1.NBT.1 Count and represent numbers.
    a. **Count forward to and backward from 120, starting at any number less than 120.**
    b. **In this range, read and write numerals and represent a number of objects with a written numeral.**
Coherence KY.K.CC.2→KY.1.NBT.1→KY.2.NBT.2
	Count forward from a given number within 100.
	
	● forward
	● backward
	● numerals
	● represent
		I am learning to count forward and backward and represent numbers.
		
		I know I am successful when:
		● I can count forward to 120 starting from any number.

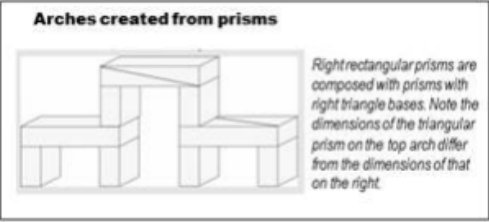|		
End goal in Unit 4: Students should be able to count forward and backward from any number in the range 1-120. Example: Start at 56 and count forward. Start at 73 and count backward. Students should be able to identify numbers 1-120 and show a number of objects (sticks and bundles, straws, unifix cubes, etc.) with the written numeral.		● I can count back from 120 starting from any number. ● I can tell the number before or after any number within 120. ● I can read numbers up to 120. ● I can write numbers to 120. ● I can write the number to show how many objects in a group within 120. ● I can count a collection of objects and can tell how many are there, write the total and tell how I found it.
1.NBT.2b Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones	● represent ● bundle ● compose ● decompose ● two-digit number ● digit ● tens ● ones ● ten-frames	I am learning to create and count numbers 11 to 19. I know I am successful when: ● I can count bundles of ten both forward and backward for teen numbers. ● I can compose teen numbers using bundles, ten-frames, or towers of ten to explain my thinking.
1.NBT.2c 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). This standard builds on the work of **KY.1.NBT.2b.** Students should explore the idea that decade numbers (e.g., 10, 20, 30, 40) are groups of tens with no left over	● represent ● bundle ● compose ● decompose ● two-digit number ● digit	I am learning to create and count numbers and quantities to 120. I know I am successful when:

ones. Students can represent this with cubes or bundles of ten (straws, craft sticks,..). ***Note about base Ten materials:*** (Most first grade students view the ten stick (numeration rod) as ONE. It is recommended to make a ten with unfix cubes or other materials that students can group. Provide students with opportunities to count books, cubes, pennies, etc. Counting 30 or more objects supports grouping to keep track of the number of objects.)	● tens ● ones ● ten-frames	● I can decompose two-digit numbers into tens and ones using materials to explain my thinking. ● I can bundle groups of ten to show a decuple (multiple of ten) number. ● I can count bundles of ten both forward and backward.
KY.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 <. Coherence KY.K.NBT.1→KY.1.NBT.3→KY.2.NBT.4 **End goal in Unit 4: Students should be able to compare numbers 1-120 using the symbols >,<, and =.** **Suggested Progression:** 1. Build numbers 0-10 and compare not using symbols. 2. Use visuals of numbers 0-10 and compare not using symbols. 3. Use bare numbers 0-10 and compare not using symbols. 4. Build numbers 0-60 and use symbols to compare. 5. Use visuals of numbers 0-60 and use symbols to compare. 6. Use bare numbers 0-60 and use symbols to compare. 7. Build numbers 0-100 and use symbols to compare. 8. Use visuals of numbers 0-100 and use symbols to compare. 9. Use bare numbers 0-100 and use symbols to compare. **10. Build numbers 0-120 and use symbols to compare.**	Compare bare numbers between 1 and 10. ● compare ● Digit ● bigger, larger, more, greater than ● smaller, fewer, less than ● equal to	I am learning to compare two-digit numbers based on the meanings of the tens and ones digits. I know I am successful when: ● I can compare numbers to 100 using manipulatives. ● I can compare numbers to 120 using visuals. ● I can compare bare numbers using symbols <, >, or =.

11. Use visuals of numbers 0-120 and use symbols to compare. **12. Use bare numbers 0-120 and use symbols to compare.**		

KY.1.NBT.4 Add within 100 including adding a two-digit number and a one-digit number. Add a two-digit number and a multiple of 10.
    a. **Add within 100 using… concrete models or drawings; strategies based on place value; properties of operations; the relationship between addition and subtraction.**
    b. **Relate the addition 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.**
                      KY.2.NBT.7
Coherence KY.1.NBT.4→ KY.2.NBT.5
 	
Suggested Progression:
1. add groups of ten together (20+10, 30+20)
2. add 1-digit numbers to decade numbers (20+4)
3. add 1-digit numbers to off-decade numbers (32+6, 45+5 to get to the next decade)
4. add decade numbers to off-decade numbers (20+34)
	● digit
	● strategy
	● multiple (groups of 10)
	● Solve
	● decade
	● off-decate
		I am learning to add within 100.
		
		I know I am successful when:
		● I can solve two-digit plus one-digit addition problems.
		● I can solve an addition problem with a two-digit number plus a group of ___ (10, 20, 30, 40, 50, 60, 70, 80, or 90).
		● I can explain my addition strategies for one-digit plus two-digit problems.

KY.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. Coherence KY.1.NBT.5→ KY.2.NBT.8	● more ● less ● ten ● reasoning ● mentally	I am learning to mentally find 10 more or 10 less than a number.

End goal of Unit 4: Students will be able to find 10 more or 10 less of a number within 120 using mental strategies. Students should be able to explain their reasoning. **Suggested progression:** ● prerequisite skill: skip count forward and backward by 10 with materials on the decade. ● find ten more and ten less than a number up to 30 using materials. ● find ten more and ten less than a number up to 30 using visuals. ● find ten more and ten less than a number up to 30 with screened materials. ● find ten more or ten less than a number up to 30 mentally. ● use Number Talks to discuss reasoning while working on the skill ● repeat above steps to 60, then to 120. Then students will need to explain their reasoning. Depending on students' level of mastery, this may be mastered during one unit or continue working into the next Unit to practice and solidify. ● extension: skip count by tens forward and backward off the decade.		I know I am successful when I can: ● find ten more or ten less than a number mentally. ● find ten more or ten less than a number and explain my reasoning.
KY.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). **a. Subtract using:** **• concrete models or drawings;** **• strategies based on place value;**	● multiples ● groups ● subtract ● models ● bundles ● reasoning ● strategy	I am learning to subtract groups of 10 from other groups of 10. I know I am successful when I can:

• properties of operations; **• the relationship between addition and subtraction** **b. Relate the subtraction strategy to a written method and explain the reasoning used.** Coherence KY.1.NBT.6→ KY.2.NBT.8 **End goal of Unit 4:** Students use strategies to subtract groups of ten from more tens. 80 – 30 can be expressed at 8 tens with 3 tens taken away which leaves 5 tens. Students explore using hundreds chart, bundles of tens, number lines and other tools.		● use models to subtract groups of 10 from groups of tens with manipulatives. ● share my strategy with others. ● Record my thinking so others can understand.
KY.1.MD.3 Assign values to time and money. a. **Tell and write time in hours and half-hours using analog and digital clocks.** b. **Identify the coins by values (penny, nickel, dime, quarter).** Coherence KY.K.MD.1→KY.1.MD.3→KY.2.MD.8	Recognize and identify coin by name. ● Hour hand ● Minute hand ● Digital ● Analog ● Half-hour ● Value ● Penny ● Nickel ● Dime ● Quarter	I am learning to write and tell time and identify coins. I know I'm successful when: ● I can tell and write time to the half-hour using an analog and digital clock. ● I can identify and recognize the values of coins (penny, nickel, dime, quarter).
KY.1.G.2 Compose shapes. b. Use 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 shapes. **MP.1, MP.4** Students do not need to learn formal names such as "right rectangular prisms." Coherence KY.K.G.6→KY.1.G.2	Compose simple shapes to form larger shapes. ● Composite ● 3-dimensional	I am learning new composite shapes can be created by combining other composite shapes. I know I am successful when I can…

Arches created from prisms *Right rectangular prisms are composed with prisms with right triangle bases. Note the dimensions of the triangular prism on the top arch differ from the dimensions of that on the right.*		● Create a new 3-D shape out of other shapes ● Create a bigger composite shape (ex: bridge/house) out of other composite shapes.
KY.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. **MP.3, MP.6** *******Students specifically DO NOT write numerical representations of fractions in primary!* *These standards focus on building conceptual understanding of partitioning and equal parts. Label parts with words only.* Students see the relationship of taking the same shape and partitioning it into equal pieces. For example, they compare the size of the pieces when it's half of a shape or a fourth of the shape. Coherence KY.K.G.6→KY.1.G.3→KY.2.G.3	Compose simple shapes to form larger shapes. ● partition ● shares ● equal	I am learning to partition circles and rectangles into two and four equal shares. I know I am successful when I can… ● partition circles into two equal shares. ● partition circles into four equal shares. ● partition rectangles into two equal shares. ● partition rectangles into four equal shares. ● describe whether a share is larger or smaller than another.

End goal in unit 4: Students see the relationship of taking the same shape and partitioning it into equal pieces. For example, they compare the size of the pieces when it's half of a shape or a fourth of the shape.		
Supporting Standards:		
KY.1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings and equations with a symbol for one unknown number to represent the problem. KY.1.MD.4 Coherence KY.1.OA.2→KY.2.NBT.6 **Suggested Progression:** 1. Use materials to add 3 numbers. 2. Use visuals to add 3 numbers. **3. Flash or screen objects to add 3 numbers.** 4. Use equations with a symbol to solve word problems.	● addends ● whole numbers ● equation	I am learning to solve word problems with 3 addends. I know I am successful when I can: ● add 3 numbers using materials. ● add 3 numbers using visuals. ● add 3 numbers using flashed objects. ● add 3 numbers using equations. ● solve word problems with 3 addends.
KY.1.OA.5 Relate counting to addition and subtraction. Coherence KY.K.CC.4→ KY.1.OA.5→ KY.1.OA.6 **End goal of Unit 3:** Students should understand that counting forward 1 is the same as adding 1. Or counting back 2 is the same as subtracting 2. see chart	Connect counting to cardinality. ● counting on ● counting back ● forward ● backward	I am learning to relate counting to addition and subtraction. I know I am successful when I can: ● explain that counting on is the same as adding. ● explain that counting back is the same as subtracting.

KY.1.MD.4 Investigate questions involving categorical data. **a. Pose a question that can be answered by gathering data.** **b. Determine strategy for gathering data from peers.** **c. Organize and represent data in a table/chart with up to three categories.** **d. Interpret data to answer questions about the table/chart that connects to the question posed, including total number of data points, how many in each category and how many more or less are in one category than in another.** <div align=center>KY.2.MD.9</div>Coherence KY.1.MD.4→ KY.2.MDT.10 **End of the unit goal:** Students create a table or chart to organize data.	● measurement ● data ● lengths ● unit ● nearest ● dot plot ● investigate	I am learning to investigate questions involving measurements. I know I'm successful when I can… ● pose a question that can be answered by gathering data. ● determine a strategy to gather data. ● organize data in a table/chart. ● answer questions using data in a table/chart.
KY.1.G.1 Distinguish between defining attributes versus non-defining attributes; build and draw shapes to possess defining attributes. Defining attributes include, but are not limited to, number of sides or open/closed shapes. Non-defining attributes include, but are not limited to, color, orientation or overall size. Coherence KY.K.G.4→ KY.1.G.1→ KY.2.G.1	● attributes (vertices, sides, straight edges, open/closed) ● non-defining attributes (colors, size, patterns, orientation) ● shapes ● distinguish (describe) ● build ● draw	I am learning to build and draw shapes. I know I'm successful when: ● I can build and draw shapes with appropriate attributes. ● I can distinguish (describe) shapes with appropriate attributes.
*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. These examples are not comprehensive.		

Anchor Resources/Materials

Investigations Unit 7 – How Many Tens? How Many Ones?
Investigations Unit 8 – Blocks and Buildings

Illustrative Mathematics - Unit 5, Adding Within 100
Illustrative Mathematics - Unit 7, Geometry & Time
Illustrative Mathematics - Unit 8, Putting it all Together

Math Learning Center Math Apps

Classroom Routines – Daily Planner Unit 7
Classroom Routines – Daily Planner Unit 8

MLC: 3-D shapes Calendar -
MLC:May. Calendar Supplement -

MLC: Numbers to 100 (review lessons if needed)
MLC: Bigger add/sub within 120 (practice lessons)

TEDD - Counting Collections
Choral Counting & Counting Collections by **Megan L. Franke, Elham Kazemi, and Angela Chan Turrou Stenhouse Publishers**

KCM Website for Primary Mathematics Support
Just log in using your FCPS email

Math Tools
Number Talk Images

Summative Assessment

While we do not have a Common Assessment for 1st grade, we recommend using the Investigations Open Response type questions that match the benchmarks/standards. There are rubrics with explanations and student work examples in the back of the Teacher Manual (In the Green PD section) that have models for:

- Exceeds expectations
- Meets expectations
- Partially expectations
- Does not meet expectations