# FCPS 2023-2024 Math Unit 3 Framework

ork <u>Unit 1 Unit 2 Unit 3 Unit 4</u>

KY Math Standards 1st grade

Grade: 1

FCPS 1st Grade Trajectory

1st Unit 3 Google Link

First grade Priority Content

Unit Title: More Story Problems: How many ways? Would you rather?

Estimated Time Frame: 35-45 days

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

## Big Idea(s) CRA explanations for 1st grade Unit 3

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.

Essential Questions:	Common Misconceptions:		
How are addition and subtraction related?	<ul> <li>Expressions vs. equations (1.OA.7)</li> <li>Forward/backward counting confusion (1.OA.6, 1.NBT.1)</li> </ul>		
How can numbers be put together and taken apart to	Fluency includes all numbers <i>within</i> 10, not just to 10 (1.OA.6)		
solve problems?	<ul> <li>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")</li> </ul>		
How can the answer to one problem be used as	<ul><li>(1.OA.6)</li><li>When counting forward/backward, crossing the decuple poses</li></ul>		
information needed to solve another problem?	a challenge (ex. 31, 30, 29 - going from 30's to 20's and vice versa) (1.NBT.1)		
How do you use time in your daily life?	<ul> <li>Numeral and digit reversals (ex. 17/71, 12/20) (1.NBT.1)</li> <li>Students who still need to count by 1's vs. just knowing the</li> </ul>		
How do you make equal shares and why is it important?	group of ten (1.NBT.2)		
	<ul> <li>Directionality of the symbols &lt;, &gt; (1.NBT.3)</li> </ul>		
	<ul> <li>When comparing bare numbers, students not understanding the true quantity (1.NBT.3)</li> </ul>		
	Measurement Confusion: not understanding correct		
	measurement strategies, not using units appropriately (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 Litera	cy 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.	<ol> <li>Recognize that text is anything that communicates a message.</li> <li>Employ, develop, and refine schema to understand and create text.</li> <li>View literacy experiences as transactional, interdisciplinary and transformational.</li> <li>Utilize receptive and expressive language arts to better understant self, others, and the world.</li> <li>Apply strategic practices, with scaffolding and then independently to approach new literacy tasks.</li> <li>Collaborate with others to create new meaning.</li> <li>Utilize digital resources to learn and share with others.</li> <li>Engage in specialized, discipline specific literacy practices.</li> <li>Apply high level cognitive processes to think deeply and critically about text.</li> <li>Develop a literacy identity that promotes lifelong learning.</li> </ol>	
Essential Standards: KAS Content Standards CRA explanations for 1st grade Unit 3	Prerequisite Skills & Sample Learning Intention Essential Vocabulary Sample Success Criteria*	
<ul> <li>KY.1.OA.6 Add and subtract within 20.</li> <li>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))</li> <li>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</li> </ul>	Small doubles facts (up to 5+5=10)  When given a number within 10, the student is able to identify the smaller part to make a 10 (ex. If I have 7, how many to make 10? 3)  5+ facts up to 10 (ex. 5+1=6, 5+2=7, etc.)	I am learning to add and subtract.  I know I am successful when:  I can add fluently within 10.  I can subtract fluently within 10.  I can tell the missing part of a number within 10. (Ex. I have 3, how many do I need to make 7?, etc)

subtraction; creating equivalent but easier or known sums.

Coherence KY.K.OA.2→KY.1.OA.6→KY.2.OA.2

End goal in Unit 3: 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 BUT WITHOUT COUNTING.**

Fluency is an ongoing process that will take much of the year to reach.

### **Suggested Progression:**

Grade: 1

- 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)

- Large doubles
- Number line
- Sums
- Strategies
- Fluency
- Decompose
- Add
- Subtract

- I can use large doubles and ten-plus to solve problems.
- I can add within 20 using a variety of strategies.
- I can subtract within 20 using a variety of strategies.
- I can apply what I know about numbers within 10 to add/subtract within 20.

<ul> <li>two addends in range of 6 to 9</li> <li>All facts to 20 mastered</li> <li>Subtrahends within 20- subtrahends within 20 (20-11, 18-6)</li> <li>KY.1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. (Within 20)</li> <li>End goal in Unit 3: Students determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? - 3, 6 + 6 =</li> <li>KY.1.OA.7</li> <li>Coherence KY.1.OA.8</li> </ul>	<ul> <li>unknown</li> <li>missing number</li> <li>addition</li> <li>subtraction</li> <li>determine</li> <li>explain</li> <li>solve</li> <li>relationship</li> </ul>	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.
<ul> <li>KY.1.NBT.1 Count and represent numbers.</li> <li>a. Count forward to and backward from 120-100, starting at any number less than 120-100.</li> <li>b. In this range, read and write numerals and represent a number of objects with a written numeral.</li> <li>Coherence KY.K.CC.2→KY.1.NBT.1→KY.2.NBT.2</li> <li>End goal in Unit 3: Students should be able to count forward and backward from any number in the range 1-100. Example: Start at 56 and count forward. Start at 73 and count backward.</li> </ul>	Count and represent numbers to 30 (forward and backward).  • 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 100 starting from any number. I can count back from 100 starting from any number. I can tell the number before or after any number within 100. I can read numbers up to 100.

Students should be able to identify numbers 1-100 and show a number of objects (sticks and bundles, straws, unifix cubes, etc.) with the written numeral.		<ul> <li>I can write numbers to 100.</li> <li>I can write the number to show how many objects in a group within 100.</li> <li>I can count a collection of objects and can tell how many are there, write the total and tell how I found it.</li> </ul>
<ul> <li>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 &gt;, =, and &lt;.</li> <li>Coherence KY.K.NBT.1→KY.1.NBT.3→KY.2.NBT.4</li> <li>End goal in Unit 3: Students should be able to compare numbers 1-100 using the symbols &gt;,&lt;, and =.</li> <li>Suggested Progression:</li> <li>1. Build numbers 0-10 and compare not using symbols.</li> <li>2. Use visuals of numbers 0-10 and compare not using symbols.</li> <li>3. Use bare numbers 0-10 and compare not using symbols.</li> <li>4. Build numbers 0-60 and use symbols to compare.</li> <li>5. Use visuals of numbers 0-60 and use symbols to compare.</li> <li>6. Use bare numbers 0-60 and use symbols to compare.</li> <li>7. Build numbers 0-100 and use symbols to compare.</li> <li>8. Use visuals of numbers 0-100 and use symbols to compare.</li> <li>9. Use bare numbers 0-100 and use symbols to compare.</li> <li>10. Build numbers 0-120 and use symbols to compare.</li> </ul>	Compare two 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 100 using visuals.  I can compare bare numbers using symbols <, >, or =.

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11. Use visuals of numbers 0-120 and use symbols to compare.		
<ul> <li>KY.1.MD.3 Assign values to time and money.</li> <li>a. Tell and write time in hours (and half-hours) using analog and digital clocks</li> <li>Coherence KY.K.MD.1→KY.1.MD.3→KY.2.MD.8</li> <li>End goal in unit 3: Students understand 60 minutes = 1 hour. (Only identify full hours at this point in the year.)</li> </ul>	Teach students to skip count by 10s on and off the decade and by 5s to help support their future ability to tell time to the minute. **The rest of this standard is in supporting standards for unit 3.  digital clock analog clock hour time minutes	I am learning to tell time to the hour.  I will know I am successful when I can  • tell the time to the hour.  • tell how many minutes are in an hour.  • tell time on a digital clock.  • tell time on an analog clock.
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.  Coherence KY.K.G.6→KY.1.G.3→KY.2.G.3  End goal in unit 3: 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.	<ul> <li>partition</li> <li>shares</li> <li>equal</li> </ul>	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.  partition rectangles into four equal shares.

		describe whether a share is larger or smaller than another.
Supporting Standards:		
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 (total) 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.  Coherence KY.K.OA.2→ KY.1.OA.1→ KY.2.OA.1  End Goal in Quarter 3: 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 addend 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	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.  I can model the story and solve a problem situation up to 20 by drawing or writing an equation to represent the situation.

9. Add to, take from with start unknown

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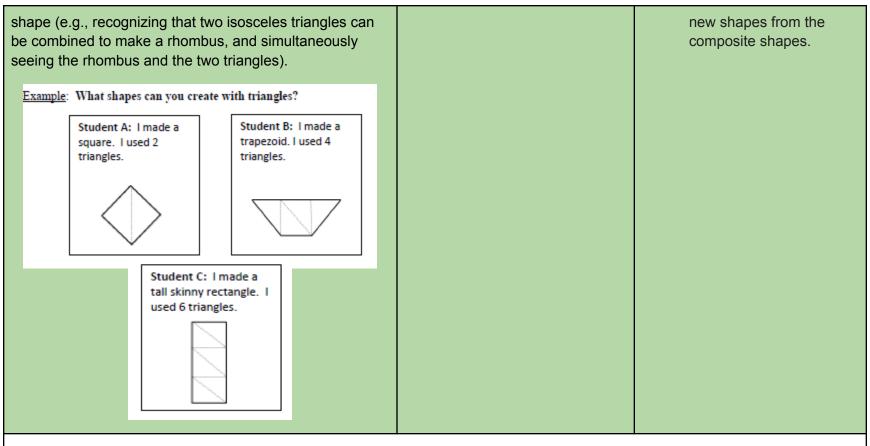
10. Comparison problems with bigger unknown, then smaller unknown		
KY.1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings and equations with a symbol for one unknown number to represent the problem.  KY.1.MD.4 Coherence 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.	<ul> <li>addends</li> <li>whole numbers</li> <li>equation</li> </ul>	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.4 Understand subtraction as an unknown-addend problem Coherence KY.K.OA.2→ KY.1.OA.4→ KY.2.NBT.9  End goal of Unit 3: Students understand they can add to solve subtraction problems by finding the unknown.  (10-4= so 4+=10)	When given a number within 10, the student is able to identify the smaller part to make a 10 (ex. If I have 7, how many to make 10? 3)  unknown solve addition subtraction	I am learning to see subtraction problems as addition problems with an unknown number.  I know I am successful when:  determine the unknown number to solve subtraction problems.  add to solve subtraction problems.
KY.1.OA.5 Relate counting to addition and subtraction. Coherence KY.K.CC.4→ KY.1.OA.5→ KY.1.OA.6	Connect counting to cardinality.  • counting on	I am learning to relate counting to addition and subtraction.

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	<ul><li>counting back</li><li>forward</li><li>backward</li></ul>	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.
<ul> <li>KY.1.NBT.2 Understand the two-digits of a two-digit numbers represent amounts of tens and ones. Understand the following as special cases: <ul> <li>a. 10 can be thought of as a bundle of ten ones — called a "ten."</li> <li>b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight or nine ones.</li> <li>c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight or nine tens (and 0 ones).</li> </ul> </li> <li>Coherence KY.K.NBT.1→ KY.1.NBT.2→ KY.2.NBT.1</li> <li>Suggested progression (Progression Poster): <ul> <li>Build the number 10 using sticks and bundles, ten frames or towers.</li> <li>Build the teen numbers using sticks and bundles, ten frames or towers (explain that twelve is the same as a ten-two, 15 is the same as a ten-five, etc.)</li> <li>Build numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 using sticks and bundles, ten-frames or towers.</li> <li>Build off-decade numbers (26, 53) using sticks and bundles, ten frames or towers.</li> </ul> </li> </ul>	<ul> <li>represent</li> <li>bundle</li> <li>compose</li> <li>decompose</li> <li>two-digit number</li> <li>digit</li> <li>tens</li> <li>ones</li> <li>ten-frames</li> </ul>	I am learning to create and count quantities to 100.  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.  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.

Hundreds, Tens, Ones charts can cause misconceptions when introduced before conceptual understanding is solid.		
<ul> <li>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.</li> <li>Coherence KY.1.NBT.5→ KY.2.NBT.8</li> <li>End goal of Unit 3: Students will be able to find 10 more or 10 less of a number within 100 using manipulatives, visuals or screened visuals. In unit 4, they will do so mentally and explain their reasoning.</li> <li>Suggested progression: <ul> <li>prerequisite skill: skip count forward and backward by 10 with materials on the decade.</li> <li>find ten more and ten less than a number up to 30 using materials.</li> <li>find ten more and ten less than a number up to 30 using visuals.</li> <li>find ten more and ten less than a number up to 30 with screened materials.</li> <li>find ten more or ten less than a number up to 30 mentally.</li> <li>use Number Talks to discuss reasoning while working on the skill</li> <li>repeat above steps to 60, then to 100. 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 unit 4 where it</li> </ul> </li> </ul>	<ul> <li>more</li> <li>less</li> <li>ten</li> <li>reasoning</li> <li>mentally</li> </ul>	I am learning to mentally find 10 more or 10 less than a number.  I know I am successful when I can:  • find ten more or ten less than a number using materials.  • find ten more or ten less than a number using visuals.  • find ten more or ten less than a number with screened materials.  • find ten more or ten less than a number mentally.  • find ten more or ten less than a number and explain my reasoning.

<ul> <li>extension: skip count by tens forward and backward off the decade.</li> </ul>		
<ul> <li>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).</li> <li>a. Subtract using:</li> <li>concrete models or drawings;</li> <li>strategies based on place value;</li> <li>properties of operations;</li> <li>the relationship between addition and subtraction</li> <li>b. Relate the subtraction strategy to a written method and explain the reasoning used.</li> <li>Coherence KY.1.NBT.6→ KY.2.NBT.8</li> <li>End goal of Unit 3: 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.</li> <li>Students explore using hundreds chart, base ten blocks, number lines and other tools.</li> </ul>	<ul> <li>multiples</li> <li>groups</li> <li>subtract</li> <li>models</li> <li>bundles</li> <li>reasoning</li> <li>strategy</li> </ul>	I am learning to subtract groups of 10 from other groups of 10.  I know I am successful when I can:  use models to subtract groups of 10 from groups of tens with manipulatives.  share my strategy with others.
<ul> <li>KY.1.MD.4 Investigate questions involving categorical data.</li> <li>a. Pose a question that can be answered by gathering data.</li> <li>b. Determine strategy for gathering data from peers.</li> <li>c. Organize and represent data in a table/chart with up to three categories.</li> <li>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</li> </ul>	<ul> <li>measurement</li> <li>data</li> <li>lengths</li> <li>unit</li> <li>nearest</li> <li>dot plot</li> <li>investigate</li> </ul>	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

each category and how many more or less are in one category than in another.  KY.2.MD.9  Coherence KY.1.MD.4→ KY.2.MDT.10  End of the unit goal: Students create a table or chart to organize data.  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	Describe similarities, differences, and attributes of 2-D and 3-D shapes with different sizes and orientations.  • 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.
<ul> <li>KY.1.G.2 Compose shapes.</li> <li>a. Compose two-dimensional shapes to create rectangles, squares, trapezoids, triangles, half-circles, quarter-circles and composite shapes to compose new shapes from the composite shapes.</li> <li>Coherence KY.K.G.6→ KY.1.G.2</li> <li>End of Unit 3 Goal: Students do not need to learn formal names such as "right rectangular prisms." First graders learn to perceive a combination of shapes as a single new</li> </ul>	Use simple shapes to construct larger shapes.  Compose/Create use 2D Shapes rectangle square trapezoid triangle half-circle quarter-circle composite shape	I am learning to use shapes to compose other 2D shapes.  I know I'm successful when:



\*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. These examples are not comprehensive.

## **Anchor Resources/Materials**

Investigations Unit 5 – Number Games and Crayon Problems
Investigations Unit 6 – Would you Rather be an Eagle or a Whale?

Illustrative Mathematics - Unit 1

Grade: 1

**Illustrative Mathematics - Unit 4** 

Illustrative Mathematics - Unit 6, Sections B & C

Illustrative Mathematics - Unit 7, Sections B & C

### **Math Learning Center Math Apps**

Classroom Routines – <u>Daily Planner Unit</u> 3 Classroom Routines – <u>Daily Planner Unit</u> 4

MLC: Numbers & Combinations to 10 ~ the Year

MLC: The Kid Count Number Line
MLC: Jan. Calendar Supplement
MLC: Feb. Calendar Supplement
MLC: March Calendar Supplement
MLC: April Calendar Supplement

#### **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