Grade: 4 **FCPS 2023-2024 Math Unit 1 Framework** Unit 1 Unit 2 Unit 3 Unit 4

Unit 1 Understand Place Value and Fluently Add & Subtract Multi-Digit Whole Numbers

KY 4th grade Math Standards | Unit 1 google form link | 4th grade Math Priority Content & Prerequisite Skills

Unit 1 Title: Understand Place Value/Fluently Add & Subtract Multi-Digit Whole Numbers Estimated Time Frame: 25 days	
Essential Standards: 4.NBT.1, 4.NBT.2, 4.NBT.3, 4.NBT.4, Supporting Standards: 4.OA.3	
Big Idea(s) CRA explanations for 4th grade Unit 1	
• The value of a number is determined by the place of its digits. • Using rounding is an appropriate estimation strategy for solving problems and estimating. • Rounded numbers are approximate and not exact. • A number can be written using its name, standard, or expanded form. • Fluently add and subtract multi-digit whole numbers using algorithms based on place value, properties of operations and/or the relationship between addition and subtraction. Number Operations in Base Ten Progressions document	
Essential Question(s)	**Common Preconceptions/Misconceptions:**
• How can whole numbers be compared? How are place values related? • How can sums and differences of whole numbers be estimated? • What are the procedures for adding and subtracting whole numbers with conceptual understanding? • How does my understanding of the base ten number system help me add and subtract? • What effect does the location of a digit have on the value of the digit? • How can I use estimation strategies to help me determine if an answer is reasonable?	- Students may confuse the periods of numbers to the millions place. - When students learn "tricks" for rounding, they do not apply them correctly nor do they have time to develop an understanding of rounding as a way to determine which ten a number is closest to. Using a number line model for rounding helps to build this understanding. - When rounding, students may confuse which multiple of 1,000, 10,000, or 100,000 to round to so a number line is a helpful tool to show which multiples the number comes between. - There is confusion when identifying the place value

	positions if students do not have a good grasp on the concept foundation from earlier grade levels. - Students often fail to estimate and will add or subtract without considering place value. - The Problem with Key Words
Standards for Mathematical Practice (**bolded** practices are emphasized in this unit) *Math Practice Standards Posters*	**Kentucky Interdisciplinary Literacy Practices (KILP)**
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.

Unit 1 Understand Place Value and Fluently Add & Subtract Multi-Digit Whole Numbers

Essential Standards: **KAS Content Standards** CRA explanations for 4th grade Unit 1	**Prerequisite Skills & Essential Vocabulary**	**Sample Learning Intentions* & Sample Success Criteria***
KY.4.NBT.1 Recognize in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. MP.7 Students recognize the relationship of same digits located in different places in a whole number. For example, in the number 435, the digit 5 in the ones place, while the digit 5 in 652 is in the tens place. The five in 652 is ten times greater than the five in 435. Coherence KY.2.NBT.1→ KY.4.NBT.1→KY.5.NBT.1	-Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). Place Value Millions Numerals Renaming	I am learning the meaning of the place value of digits in numbers so… • I can recognize that a digit in one place has ten times the value of the same digit in the place to its right.
KY.4.NBT.2 Represent and compare multi-digit whole numbers. **a. Read and write multi-digit whole numbers using base-ten**	Expanded Form Standard Form	I am learning to represent and compare the meaning of

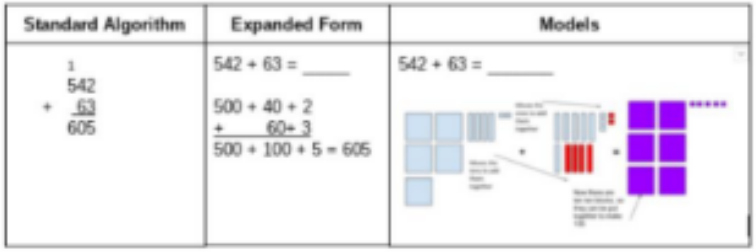
numerals, number names and expanded form. **a. Compare two multi-digit numbers based on meanings of the digit in each place, using >, =, and < symbols to record the results of comparisons. MP.2, MP.7** b. Students write numbers in three different forms. For example, 435, four hundred thirty-five, 400 + 30 + 5. b. Students use different forms of the number to help compare. For example, when students are comparing numbers, they determine that 453 is greater than 435 because the 5 is worth 50 in 453, while the tens place only has 3 worth 30 in 435. So 453 > 435. Coherence KY.4.NBT.2→KY.5.NBT.3	Less than symbol < Greater than symbol >	multi-digit numbers so… • I can read, write , and represent numbers through one million. • I can represent (i.e. base-ten blocks, place value chips) numbers in expanded form. • I can read, write, and represent numbers through one million using numerals and number names. • I can use place value to compare numbers and record my comparisons using <, =, >.
KY.4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place. MP.2, MP.6 Students go beyond the application of a procedure when rounding. Students demonstrate a deeper understanding of number sense and place value when they explain and reason about the answers they get when rounding. Coherence KY.3.NBT.1→ KY.4.NBT.3 →KY.4.OA.3 KY.5.NBT.4	-Use place value understanding to round whole numbers to the nearest 10 or 100. Rounding Estimate	I am learning to use place value to round numbers so… • I can use number sense and place value to round multi-digit numbers

Attending to the Standards for Mathematical Practice 4.NBT.1-4.NBT.3

Students use precise language, such as "ten times as much as" rather than "ten times more than" as they describe place value relationships (MP.6). Students make the conceptual connection between place value and multiplying and dividing by 10, noticing when any digit is multiplied by 10, the place of the digit moves one place to the left and when a digit is divided by 10, it moves to one place to the right. Beyond noticing this pattern, students understand this pattern exists because place value is structured this way (MP.7). For example, in solving 35 x 10 = ___, students might place 35 in a place value chart and explain 5 tens is 50, therefore, moving the 5 to the tens place and 30 tens equals 3 hundreds, therefore, moving the 3 to the hundreds place.

KY.4.NBT.4 Fluently add and subtract multi-digit whole numbers using an algorithm. MP.2, MP.8

Students make connections from previous work with addition and subtraction, using models/representations to develop an efficient algorithm to add and subtract multi-digit numbers. These are types of algorithms/strategies one could possibly use (but not limited to) to solve adding and subtracting multi-digit whole numbers.



Coherence KY.3.NBT.2→ KY.4.NBT.4→KY.5.NBT.5

-Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations and/or the relationship between addition and subtraction.

Addend
Algorithm
Sum
Difference
Equation
Variable
Commutative Property of Addition
Associative Property of Addition
Identity Property of

I am learning to fluently add and subtract multi-digit numbers using place value and an efficient standard algorithm so…

- I can use properties, models/ representations (i.e. base-ten blocks, place value chips) and strategies to add and subtract.
- I can use rounding and place value to estimate sums and differences.
- I can use number sense and regrouping to subtract from numbers with zeros.

	Addition Inverse Operations	
Attending to the Standards for Mathematical Practice 4.NBT.4 Students select from their repertoire of strategies to solve multi-digit whole number addition or subtraction problems. For example, for the problem 345,402 – 67,087 =□, a student might choose to stack it and subtract using an algorithm. The same student seeing 56,708 – 9,998 = __, might notice how close the subtrahend (second value) is to 10,000 and decide to subtract 10,000 and add 2 onto the answer (MP.2). In general, students determine their approach based on the numbers in the problem seeking an efficient strategy		
Supporting Standards:		
(focus on addition and subtraction problems in unit 1, save order of operations until unit 2 with multiplication and division) KY.4.OA.3 Solve multistep problems. a. Perform operations in the conventional order when there are no parentheses to specify a particular order. b. Solve multistep word problems posed with whole numbers and having whole number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computations and estimation strategies including rounding. MP.1, MP.4 b. For example, Mr. May's grade four class is collecting	Reasonableness	I am learning to solve multi-step problems with whole numbers using addition and subtraction so… ● I can solve multi-step problems by thinking about what the question is asking me to do as I complete each step. ● I can make sense of problems and keep working if I get stuck by trying different strategies and representations

canned goods for a food drive. Their goal is to bring in 50 cans of food by Friday. So far, the students have brought in 10 on Monday and Tuesday, 14 cans on Wednesday and 13 on Thursday. How many more cans will the class need to bring in to reach their goal? 50 = 2 x 10 + 14 + 13 + c 50 = 20 + 14 + 13 + c 50 = 47 + c 3 = c Note: Estimation skills include identifying when estimation is appropriate, determining method of estimation and verifying solutions or determining the reasonableness of situations using various estimation strategies. The skill of estimating within context allows students to further develop their number sense. Coherence KY.3.OA.8→ KY.4.OA.3→KY.7.NS.3 The focus in this standard is to have students use and discuss various strategies. It refers to estimation strategies including using compatible numbers (numbers that sum to 10 or 100) or rounding. Problems should be structured so that all acceptable estimation strategies will arrive at a reasonable answer. Students need many opportunities to solve multi-step story problems using all four operations.		
*****Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. These examples are not comprehensive.		
Practice Standards and Number Sense Resources:		
Mathematics Practice Standards, Games and Routines	***-1st Semester Take-Home Games*** -TheresaWills Games	

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(Introduce the Math Practice Standards and routines during the first week of school and use throughout the year) *(approximately 1 week)* **Math Practices & Problem Solving Handbook** (in student book -videos available on Savvas platform) Problem Solving Organizer The Problem with Key Words Numberless Word Problem Example Three Reads Strategy **4th grade number sense routines slides** (VA) *(Use number routines 5-10 minutes daily all year in addition to math class time - Introduce during the first days of school.)* **Math Routines & Resources** **Sample Daily Math Routines** Additional: Number Routines used 5-10 minutes daily all year (MD) **51 Esti-Mysteries** **Splat**	Word Wall Cards -EnVisionMathGames -Investigations Math Games -Investigations Math Words and Ideas -*KDE Family Math Games* -*4th grade HomeLetters* *4th grade additional practice* ***-1st Semester Teaching Tools*** (listed for each Topic below) **4th grade Anchor charts** (includes an anchor chart for every standard for the whole year) **4th grade Math FCPS Google Site of Resources** **Great problem based tasks and videos to start the year:** -Practice Standards Tasks to Start the Year from Howard County/youcubed to **build growth mindset** **example video: The Importance of Struggle** **example Task: Basketball Courts** 1-100 Task to Teach Group Work in Math: Directions or Teachers NameTentFeedbacK to Connect with students to start school
Anchor Resources by enVision Topic	**Supplemental Resources by Standard**
Topic 1 – Generalize Place Value Understanding 4.NBT.1 4.NBT.2 4.NBT.3 *(approximately three weeks)* **4th grade Anchor charts** *Hands-On or Online Manipulatives:* ***Base-10 Blocks, Place Value Chips,*** *Place Value Chart Teaching Tool 3* **-Topic 1 Review What You Know Prerequisite Skills** **-Topic 1 Vocabulary Cards** **GA Place Value & Rounding Unit** Kendall Hunt Illustrative Place Value, Add, Subtract Unit	**4.NBT.1** What's My Number? True or False? Threatened and Endangered **4.NBT.2** Ordering 4-digit numbers Place Value Sort Place Value Triangle Numeral, Word and Expanded Form **4.NBT.3** Rounding on the Number Line Place Value Tangmath Desmos Place Value activity Rounding to the Nearest 1000 Rounding to the Nearest 100 and 1000 What's the Nearest Hundred? (4-digit) Roll and Round: Nearest Hundred (4-digit)

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enVision Topic 2 – Fluently Add and Subtract Multi-Digit Whole Numbers 4.NBT.4 4.OA.3 May need 2 days for lessons 2-1, 2-2, & 2-5 *(approximately two weeks)* *Use Hands-On or Online Manipulatives:* ***Base-10 Blocks,*** *grid paper Teaching Tools 9 & 10* **-Topic 2 Review What You Know Prerequisite Skills** **-Topic 2 Vocabulary Cards** Bucky the Badger 3 Act Math Task Desmos four-function calculator	How to teach Whole Numbers with Base 10 blocks **4.NBT.4** Make the Largest Sum Close to Zero (3-Digit) Desmos Whole Number Place Value Activity The Add/Subtract Range Game **4.OA.3** Let It Fly 3 Act Math Task Word Problems: Addition and Subtraction within 1,000
Summative Assessment	
(Common Unit Assessment in ADAM) This unit assessment will focus on place value to the millions and conceptual models of multi-digit addition and subtraction with various representations and strategies to solve problems……	