Grade: 5 **FCPS 2023-2024 Math Unit 1 Framework** Unit 1 Unit 2 Unit 3 Unit 4

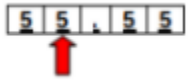
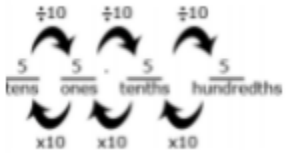
Unit 1 Whole Number/Decimal Place Value, Add/Subtract Decimals, Write/Interpret Numerical Expressions

KY 5th grade Math Standards Unit 1 framework google link 5th grade Math Priority Content & Prerequisite Skills

Unit 1 Title: Whole Number/Decimal Place Value, Add/Subtract Decimals, Numerical Expressions Estimated TimeFrame:28 days	
Essential Standards: 5.NBT.1, 5.NBT.3, 5.NBT.4, 5.NBT.7(add/subtract only), 5.OA.1, 5.OA.2, Supporting Standards: 5.NBT.2, 5.MD.1	
Big Idea(s) **CRA explanations for 5th grade Unit 1**	
• The location of a digit in decimal numbers determines the value of the digit. • Rounding decimals should be "sensible" for the context of the problem. • Decimal numbers can be represented with models. • Relate decimal place value to converting metric measurements/ • Addition and subtraction with decimals are based on the fundamental concept of adding and subtracting the numbers in like position values. Number Operations in Base Ten Progressions document Operations and Algebraic Thinking Progressions document	
Essential Question(s)	**Common Preconceptions/Misconceptions:**
• How are whole numbers and decimals written, compared and ordered? • How can sums and differences of decimals be estimated or found mentally? • What are the procedures for adding and subtracting decimals with conceptual understanding? • What are metric measurement units and how are they related? How are they related to decimals? • How is the value of a numerical expression found?	-Students often fail to estimate, and the decimal is misplaced in the solution. -When decimals are taught in isolation, students often fail to realize that they are a representation of a fractional amount. The Problem with Key Words -Rounding decimals without the use of a visual model (such as a number line) may be challenging for some students. -Students will add or subtract without considering place value, or starting at the right as with whole numbers. Ex. 4.15 + 0.1 = 34.16 or 12 – 0.1 = 11

Unit 1 Whole Number/Decimal Place Value, Add/Subtract Decimals, Write/Interpret Numerical Expressions

<table>
<tr><td>Standards for Mathematical Practice
(bolded practices are emphasized in this unit)
Math Practice Standards Posters</td><td colspan="2">Kentucky Interdisciplinary Literacy Practices (KILP)</td></tr>
<tr><td>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.</td><td colspan="2">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.</td></tr>
<tr><td>Essential Standards:
KAS Content Standards
CRA explanations for 5th grade Unit 1</td><td>Prerequisite Skills & Essential Vocabulary</td><td>Sample Learning Intentions* & Sample Success Criteria*</td></tr>
</table>

KY.5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. MP.2, MP.7 In the number 55.55, each digit is 5, but the value of each digit is different because of the placement.  The arrow points to is $\frac{1}{10}$ of the 5 to the left and 10 times greater than the 5 to the right. The 5 in the ones place is $\frac{1}{10}$ of 50 and 10 times greater than five tenths.  Note: grade 5 expectations in this domain are limited to decimals through the thousandths place. Coherence KY.4.NBT.1→KY.5.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. place value tenths hundredths thousandths millions	I am learning to understand the relationship between the value of each digit in a number by its place value so… • I can look at the structure of our place value system to solve problems with whole numbers and decimals. I am learning to look at a digit in a number and determine it represents 10 times as much as the place to its right and one-tenth of what it represents to the place on its left so… • I can use tools and representations like place value charts and place value pieces to determine what the value of each digit in a number means.

KY.5.NBT.3 Read, write and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names and expanded form. **b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. MP.2, MP.5, MP.7** a. For the number 347.392… ● number name: three hundred forty-seven and three hundred ninety-two thousandths ● expanded form: $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1000})$ Students relate numbers they are comparing back to common benchmarks of $0, \frac{1}{2}$ (0.5, 0.50 and 0.500) and 1. When comparing numbers, 0.35 and 0.12, students make the connection 0.35 > 0.12, but also see the relationship of 0.12 < 0.35. Note: grade 5 expectations in this domain are limited to decimals through the thousandths place. KY.4.NBT.2 Coherence KY.4.NF.7→ KY.5.NBT.3	-Represent and compare multi-digit whole numbers. a. Read and write multi-digit whole numbers using base-ten numerals, number names and expanded form. b. Compare two multi-digit numbers based on meanings of the digit in each place, using >, =, and < symbols to record the results of comparisons. expanded form standard form equivalent decimals	I am learning to write decimals to the thousandths place in word form, expanded form, and standard form so… ● I can read and write decimals to the thousandths in different ways. I am learning to compare decimals to the thousandths place using common benchmarks, and place value pieces and representations so… ● I can compare decimals with and without place value representations and express their relationship using the symbols, >,<, or =.
KY.5.NBT.4 Use place value understanding to round decimals to any place. MP.5, MP.7	-Use place value understanding to round multi-digit whole	I am learning to round decimals to the thousandths place so…

Students go beyond application of an algorithm or procedure when rounding. Students demonstrate a deeper understanding of number sense and place value and explain and reason about the answers they get when they round. Note: grade 5 expectations in this domain are limited to decimals through the thousandths place. Coherence KY.4.NBT.3→ KY.5.NBT.4	numbers to any place. Round place value benchmarks	• I can place decimals on a number line. • I can determine the • digit that is to be rounded according to the specified place value. • I can identify the two benchmarks to which a number is closest. • I can explain my rounded answer.

Attending to the Standards for Mathematical Practice 5.NBT.1-5.NBT.4

Students compare the value of the digits based on where they are in a number (MP.7). They reason 10 tens equal 100, 70 tens equal 700 and this can be illustrated with base 10 blocks or other visuals (MP.2). Students look across series of problems to notice a pattern when multiplying by 10, 100 or 1000 (MP.8) and justify why patterns exist (why 36 x 100 = 3600), rather than superficially noting 'you add zeros,' they explain or show there are actually 36 hundreds, so 3600 (MP.3). Students use similar reasoning to compare decimal values, explaining tenths are larger than hundredths and therefore, they look to first see which values have more tenths before looking at how many hundredths it has (MP.2, MP.7). Students use tools such as number lines and base 10 blocks to see place value relationships with decimals in order to compare and to round (MP.5)

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KY.5.NBT.7 Operations with decimals to hundredths. **a. Add, subtract, ~~multiply and divide~~ (next Unit)* decimals to hundredths using…** **● concrete models or drawings** **● strategies based on place value** **● properties of operations** **● the relationship between addition and subtraction** **b. Relate the strategy to a written method and explain the reasoning used. MP.2, MP.3, MP.5** ~~Students connect previous experiences with the meaning of multiplication and division of whole numbers to multiplication and division of decimals using estimation, models and place value structure.~~ (next unit)* For example: 3 tenths subtracted from 4 wholes. The wholes must be divided into tenths.  The answer is 3 and $\frac{7}{10}$ or 3.7 Coherence KY.4.NBT.6→ KY.5.NBT.7→KY.6.NS.3 *Decimal Multiplication and Division will be in the next unit.	-Fluently add and subtract multi-digit whole numbers. Decimal	I am learning to use visual models and equations to add and subtract decimals so… ● I can represent decimal addition and subtraction on a number line. ● I can represent decimal addition and subtraction using base-10 blocks or grids. ● I can use decimals to solve problems.

KY.5.OA.1 Use parentheses, brackets or braces in numerical expressions and evaluate expressions that include symbols. MP.1, MP.3 Students work with the order of first evaluating terms in parentheses, then brackets, [] and then braces, {}. Coherence KY.5.OA.1→ KY.6.EE.2	order of operations parentheses brackets braces evaluate	I am learning to use order of operations so… ● I can use order of operations to evaluate expressions. ● I can evaluate expressions with parentheses, brackets and braces.
KY.5.OA.2 Write simple expressions with numbers and interpret numerical expressions without evaluating them. MP.2, MP.7 Students translate from words "add 8 and 7, then multiply by 2" to 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product. Coherence KY.4.OA.1→ KY.5.OA.2→KY.6.EE.3 KY.6.EE.4 KY.6.EE.2	-Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. numerical expression	I am learning to write and interpret numerical expressions so… ● I can write simple expressions that show calculations with numbers. ● I can interpret numerical expressions without evaluating them.

Attending to the Standards for Mathematical Practice 5.OA.1-2

Students move between words and symbols, understanding equivalent ways to express a statement. Students interpret the statement "The sum of 347, 124 and 99, divided by 30 as, (347 + 124 + 99) ÷ 30 and as $\frac{347 + 124 + 99}{30}$ (MP.7). As they evaluate such expressions, they realize there are options within the order of operations. In this expression, they add the three values and then divide by 30, or divide each addend by 30 and get the same answer. They think of a context to convince themselves that two options will lead to the same answer (MP.2). In this case, students consider the two options and see the first idea is less 'messy' and therefore, a good choice (MP.1).

Supporting Standards:		
KY.5.NBT.2 Multiply and divide by powers of 10. ● Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. ● Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. ● Use whole-number exponents to denote powers of 10. MP.3, MP.8 Students recognize when a number is multiplied by 10, a zero is added to the end because each digit's value became 10 times larger. Students use the same reasoning to explain in the problem. ● $523 \times 10^3 = 523{,}000$ The place value of 523 is increased by 3 places. ● $5.223 \times 10^2 = 522.3$ The place value of 5.223 is increased by 2 places. ● $52.3 \div 10^1 = 5.23$ The place value of 52.3 is decreased by one place.	exponent power base	I am learning to explain the movement of the decimal when multiplying or dividing by powers of ten so… ● I can write numbers using exponents.

Note: grade 5 expectations in this domain are limited to decimals through the thousandths place. Coherence KY.5.NBT.2→ KY.6.EE.1		
KY.5.MD.1 Convert among different size measurement units (mass, weight, liquid volume, length, time) within one system of units (metric system, ~~U.S. standard system and time)~~(in later unit)*. MP.3, MP.8 Within the same system convert measurements in a larger unit in terms of a smaller unit and a smaller unit in terms of a larger unit. Use these conversions in solving multi-step, real world problems. Coherence KY.4.MD.1→ KY.5.MD.1→KY.6.RP.3 *(U.S. standard system and time will be in a later unit.)	-Know relative size of measurement units (mass, weight, liquid volume, length, time) within one system of units (metric system, U.S. standard system and time). a. Understand the relationship of measurement units within any given measurement system. b. Within any given measurement system, express measurements in a larger unit in terms of a smaller unit. c. Record measurement equivalents in a two-column table. Meter, Kilometer, Centimeter, Millimeter, Liter, Milliliter, Gram Miligram, Kilogram	I am learning to relate decimal place value to converting in metric units in solving multi- step real world problems so… • I can convert metric units of length. • I can convert metric units of capacity. • I can convert metric units of mass.

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Attending to the Standards for Mathematical Practice

Students notice patterns about how units and measurements relate to each other (MP.8). For example, students measure various objects in meters and in centimeters (using a meter stick). As they measure their items, they record the measurements in a table. They notice the object that measures about 300 centimeters also measures about 3 meters (MP.8). They explain why this pattern is true, arguing each of the meters has 100 centimeters, so 3 meters will have 300 centimeters and more generally explaining the smaller the unit the more of unit there will be when measuring the same object (MP.3).

*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
(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

5th 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**

5th grade anchor charts

-1st Semester Take-Home Games TheresaWills Games
-EnVisionMathGames -Investigations Math Games
-Investigations Math Words and Ideas *-KDE Family Math Games* Word Wall Cards *5th grade Home Letters* *-5th grade additional practice*
1st Semester Teaching Tools (listed for each Topic below
5th grade anchor charts

Great problem based tasks and videos to start the year:
-Tasks to Start the Year from Howard County/youcubed to **build growth mindset**
example video: Brain Grow and Change
example Task: Riding Roller Coasters
1-100 Task to Teach Group Work in Math: Directions or Teachers NameTentFeedbacK to Connect with students to start school

5th grade Math FCPS Google Site of Resources

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Anchor Resources by enVision Topic	Supplemental Resources by Standard
enVision Topic 1 – Understand Place Value 5.NBT.1 (5.NBT.2) **5.NBT.3 5.NBT.4** *Possibly omit lesson 1-7* *(approximately 2 weeks)* *Use Hands-On or Online Manipulatives:* ***Base-10 blocks, Place Value Chips, Variety of Measurement tools/ containers, rulers****, Base-10 sheets Teaching Tool 4- 5, Place Value charts TT3&TT6, Number lines TT12 Grids TT9&10* **-Topic 1 Review What You Know Prerequisite Skills** **-Topic 1 Vocabulary Cards** **-Topic 11 Review What You Know Prerequisite Skills** ****Final Lap 3 Act Math Task	**5.NBT.1** Place Value Concentration Desmos Whole Number Place Value Activity Kipton's Scale Millions and Billions of People Which number is it? Tenths and Hundredths Place Value to the Thousandths Decimals Open Response High Roller **5.NBT.3** Representing Decimals Place Value Compare Are these equivalent to 9.52? Comparing Decimals Comparing Decimals on the Number Line Placing Thousandths on the Number Line Drawing Pictures to Illustrate Decimal Comparisons Chasing Gold 3 Act Math Task **5.NBT.4** Rounding Decimals on a Number Line Roll and Round (nearest tenth) Desmos Activity Rounding Rounding to Tenths and Hundredths Decimals Word Wall Cards **GA adding & subtracting decimals unit**
enVision Topic 2 - Add and Subtract Decimals to the Hundredths (5.NBT.4) **5.NBT.7** *Possibly omit lesson 2-7* *(May need to review concept of decimals 4.NF.6 &7)* *(approximately 2 weeks)* *Use Hands-On or Online Manipulatives:* ***Base-10 blocks,*** *Base-10 sheets Teaching Tool 4- 5, Place Value charts TT3&TT6, Number lines TT12, Decimal Grids TT7-8* **-Topic 2 Review What You Know Prerequisite Skills** **-Topic 2 Vocabulary Cards** **Inside Mathematics Decimal Place Value Card Sort Lesson	**5.NBT.7** How to teach Decimals with Base 10 blocks Decimal Cross Number Puzzles Decimal Subtraction Spin Desmos Add/Subtract Decimals Activity Decimal Concept Card Sort slides **GA adding & subtracting decimals unit** Kendall Hunt Illustrative math decimals unit Desmos four-function calculator

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**The Water Boy 3 Act Math Task	
enVision Topic 13 - Write and Interpret Numerical Expressions 5.OA.1 5.OA.2 *(Needed to address this standard earlier in the year, but may need to use more of the supplemental resources on the right as envision topic 13 includes fraction and decimal operations not taught yet) possibly omit lesson 13-5 Teach calculator skills for order of operations with ( )* *(approximately 1 week)* **–Topic 13 Review What You Know Prerequisite Skills** Desmos four-function calculator	**5.OA.1** How Many Expressions? What Year Is It? Picturing Factors in Different Orders Bowling for Numbers Why Do We Need an Order of Operations? Using Operations and Parentheses Partner Coach Order of Operations **GA order of operations unit** **5.OA.2** Remove Expressions 1 You Can Multiply Three Numbers in Any Order Watch Out for Parentheses 1 Comparing Products Video Game Scores Seeing is Believing Words to Expressions Which step comes first digital activity Order of Operations Task Card Gr 5 Order of Operations Steps Order of Operations Station Order of Operations True or False Sort (Digital Version) Numerical Expressions
Summative Assessment	
(Common Unit Assessment on ADAM) This unit assessment will focus on place value of whole numbers and decimals, conceptual models of addition and subtraction of decimals and writing and interpreting numerical expressions to solve problems.	