2 4th Unit 2

Grade: 4

FCPS 2025-2026 Math Unit 2

Unit Title: Operations- Multiplication, Division, and Algebraic Thinking	**Estimated Time F**
Essential Standards: 4.OA.1, 4.OA.2, 4.OA.3, 4.OA.4, 4.OA.5 Supporting Standards: N/A End of Unit Common Assessment	

FCPS Supporting Links			**Additional Supporting Links**
Pacing Guide Standards Progression FCPS Math Guidance Document Elementary Intellectual Preparation Cycle Trauma-Informed Strategies	Unit 1 Unit 2 Unit 3 Unit 4 Unit 5	CRA Examples (concrete, representational, & abstract) Unit 2: Unit Flow & Progression Video *Must be logged into i-Ready to access this link	Kentucky Academic Standards KSA Blueprint Achieve the Core Progression Documents • Counting and Cardinality and Operatio Literary Connections Target of the Standards - conceptual, proced Multilingual Glossary Unit 2 Language Support for English Learners* Manipulative List* *Must be logged into i-Ready to access this link.

Big Ideas

- Solve problems involving multiplicative comparisons by using multiplication and division
- Basic multiplication facts help to determine the factors of a number
- Rules are used to generate and extend a number or shape pattern

For more information, view the **Math Background pages 105m-105p in the Teacher's Guide (must be logged into i-R*

Essential Questions	**Common Preconceptions/Misconceptions**
How is comparing with multiplication different from comparing with addition? What do the factors in an equation mean and how do they connect to a word problem? What are the relationships between multiples and factors?	• Students often think that they can "just or composite. For instance, they may s in 1 "seem" prime, but while 11 and 31 a Help students understand there are no prime numbers. • Students may have difficulty distinguis additive comparisons. Use counters to and 3 more than 5.

Standards for Mathematical Practices	**Kentucky Interdisciplinary Literacy Practic**

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 commu 2. Employ, develop, and refine schema to und 3. View literacy experiences as transactional, transformational. 4. Utilize receptive and expressive language a self, others, and the world. 5. Apply strategic practices, with scaffolding a approach new literacy tasks. 6. Collaborate with others to create new mea 7. Utilize digital resources to learn and share v 8. Engage in specialized, discipline-specific li 9. Apply high-level cognitive processes to thi about text. 10. Develop a literacy identity that promotes li
Essential Standards	**Sample Learning Intentions & Success Criteria**
	❗ Indicates a misalignment with Kentu **🔷Indicates a consideration fo**
Cluster: Use the four operations with whole numbers to solve problems.	
KY.4.OA.1 Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. MP.2, MP.4 ☐ Conceptual ❑ Procedural ❑ Application Students interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Coherence KY.3.OA.1→ KY.4.OA.1→KY.5.NF.5	We are learning to interpret and represent multiplication as a comparison so we understand the meaning of quantities. I know I am successful when: • I can use equations to represent verba statements of multiplicative comparisons. • I can create verbal statements to represent multiplication equations.
KY.4.OA.2 Multiply or divide to solve word problems involving multiplicative comparisons by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. MP.1, MP.2, MP.3 ❑ Conceptual ❑ Procedural ☐ Application Students solve multiplicative comparison problems using drawings and equations to determine situations like the ones below (See Table 2 in Appendix A) on which quantity is being multiplied and which factor is telling how many times.	We are learning to use multiplicative comparisons so we can solve word problems by multiplying and dividing. I know I am successful when: • I can use drawings or equations with a symbol for an unknown number to represent and solve a word problem involving multiplicative comparison. • I can distinguish the difference betwee multiplicative comparisons and additiv comparisons.

Common Comparison Problems for Multiplication and Division		
Unknown product	Group size unknown	Number of groups unknown
A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost? Measurement example: A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?	A red hat costs $18 and that is 3 times as much as a blue hat costs. How much does a blue hat cost? Measurement example: A rubber band is stretched to be 18 cm long and is 3 times as long as it was at first. How long was the rubber band at first?	A red hat costs $18 and a blue hat costs $6. How many times as much does the red hat cost as the blue? Measurement example: A rubber band was 6 cm long at first. Now it is stretched to be 18 cm long. How many times as long is the rubber band now as it was at first?
$a \times b = ?$	$a \times ? = p$ and $p \div a = ?$	$? \times b = p$ and $p \div b = ?$

Coherence KY.3.OA.3→ KY.4.OA.2→KY.5.NF.3

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

❑ Conceptual ❑ Procedural ❑ Application

a. Students use their knowledge of order of operations even when there are no parentheses or brackets.
31 + 3 × 8 - 20 =
b. For example, Mr. May's grade four class is collecting 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.

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

We are learning to use the four operations to solve multi-step word problems.

I know I am successful when:

- I can use letters to represent unknown quantities in equations.
- I can solve multi-step problems by breaking it down into which parts must be solved first (order of operations).
- I can interpret the remainder in a division situation.
- I can estimate sums and differences to make sure my answer is reasonable.

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. Coherence KY.3.OA.8→ KY.4.OA.3→KY.7.NS.3	

Attending to the Standards for Mathematical Practice

Students recognize a number represents a specific quantity and connects the quantity to written symbols and cr representation of the problem considering both the appropriate units involved and the meaning of quantities (MP 35= 5 x 7, students identify and verbalize which quantity is being multiplied and which number tells how many tim years old. Her mom is seven times older. How old is Sally's Mom?" Students discover a pattern or structure (MP.7) distinguishes an additive comparison by identifying this type of question asks, " How many more?" and a multipli on comparing two quantities by asking," How many times as much?" or "How many times as many?" Students so using models and equations using a symbol to represent the unknown (MP.4).

Cluster: Gain familiarity with factors and multiples.

KY.4.OA.4 Find factors and multiples of numbers in the range 1-100. **a. Find all factor pairs for a given whole number.** **b. Recognize that a whole number is a multiple of each of its factors.** **c. Determine whether a given whole number is a multiple of a given one-digit number.** **d. Determine whether a given whole number is prime or composite. MP.5, MP.7** ☐ Conceptual ❑ Procedural ❑ Application Students extend their knowledge of multiplication and division facts by exploring patterns they have found by building conceptual understanding of prime numbers (numbers with exactly two factors) and composite numbers (numbers with more than two factors). Patterns include: Numbers that end in 0 have 10 as a factor. These are multiples of 10. Numbers that end in 0 or 5 as a factor. These are multiples of 5. Even numbers have 2 as a factor. These numbers are multiples of 2. Numbers that can be halved twice have 4 as a factor. These numbers are multiples of 4. Coherence KY.3.OA.7→ KY.4.OA.4→KY.6.NS.4	We are learning about factors and multiples s we can multiply and divide fluently. I know I am successful when: • I can find factor pairs using arrays and other strategies. • I can explain the relationship between factors and multiples. • I can find multiples using patterns and other strategies. We are learning to explore patterns so we can determine if a number is prime or composite. I know I am successful when: • I can build all possible arrays for a number to determine if a whole numbe is prime or composite.

Attending to the Standards for Mathematical Practice

Students use the structure and pattern of the counting numbers to find factor pairs, recognizing once they reach have to keep looking for factors (MP.7). Students build arrays with a given area and look for patterns such as num identify if the number is prime or composite. For example, noticing the number 7 has only two possible arrays, 1 x prime. The number 4 has more than two rectangular arrays, 1 x 4, 4 x 1 and 2 x 2 and therefore, it is composite.

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Cluster: Generate and analyze patterns.	
KY.4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern not explicit in the rule itself. MP.2, MP.3 □ Conceptual ❑ Procedural ❑ Application For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. Coherence KY.3.OA.9→ KY.4.OA.5→KY.5.OA.3	We are learning to identify, extend, and generate patterns so we can follow a given rule. I know I am successful when: • I can identify the rule of a number or shape pattern. • I can extend the number or shape pattern based on a given rule. • I can generate a number or shape pattern based on a given rule. • I can identify and explain additional features of the pattern that are not stated in the rule itself.

Attending to the Standards for Mathematical Practice
Students analyze growing patterns and determine rules to describe the pattern (MP.2). Students know a pattern is the same rule over and over. Students generate their own rules and create an example using that rule, for exampl 243 for the rule “times 3”. Students describe features of the pattern for example, all numbers are odd, or sums of rule for generating the next number, for example “times 3”, as well as critique the reasonableness of features and others (MP.3)