



## Unit Plan

### Putting It All Together

Chester / Littleville Elementary / Grade 4 / Mathematics

[Week 35 - Week 37](#) | 5 Curriculum Developers | Last Updated: Mar 20, 2024 by LeBlanc, Deanna

[Style Guide](#)

## What is the purpose of the unit? What are the major take-aways?

### Standards

#### MA: Mathematics (2017)

#### MA: Grade 4

#### Operations & Algebraic Thinking

##### 4.OA Use the four operations with whole numbers to solve problems.

- 3. 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 computation and estimation strategies including rounding.
- 1. Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- 2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- 3.a. Know multiplication facts and related division facts through  $12 \times 12$ .

##### 4.OA Gain familiarity with factors and multiples.

- 4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

##### 4.OA Generate and analyze patterns.

- 5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. [Show Details](#)

#### Number & Operations in Base Ten

##### 4.NBT Generalize place value understanding for multi-digit whole numbers less than or equal to 1,000,000.

- 1. Recognize that in a multi-digit whole number, a digit in any place represents ten times what it represents in the place to its right. [Show Details](#)
- 2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- 3. Use place value understanding to round multi-digit whole numbers to any place.

##### 4.NBT Use place value understanding and properties of operations to perform multi-digit arithmetic of whole numbers less than or equal to 1,000,000.

- 4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- 5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

### Number & Operations—Fractions

#### 4.NF Extend understanding of fraction equivalence and ordering to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

[Show Details](#)

- 1. Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions, including fractions greater than 1.
- 2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as  $1/2$ . Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual fraction model.

#### 4.NF Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers for fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

- 3. Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ .
- 4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- 3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using drawings or visual fraction model. [Show Details](#)
- 3c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- 3d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using drawings or visual fraction models and equations to represent the problem.
- 3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. (The whole can be a set of objects).

#### 4.NF Understand decimal notation for fractions, and compare decimal fractions.

- 5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. [Show Details](#)
- 6. Use decimal notation to represent fractions with denominators 10 or 100 [Show Details](#)
- 7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols  $>$ ,  $=$ , or  $<$ , and justify the conclusions, e.g., by using a visual model.

### Geometry

#### 4.G Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

- 1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

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Enduring Understandings

Essential Questions

Content

Skills

In this unit, students revisit major work and fluency goals of the grade, applying their learning from the year.

In Section A, students reinforce what they learn about comparing fractions, adding and subtracting fractions, and multiplying fractions and whole numbers. In Section B, they strengthen their ability to add and subtract multi-digit numbers fluently using the standard algorithm. They also multiply and divide numbers by reasoning about place value and practice doing so strategically. In Section C, students practice making sense of situations and solving problems that involve reasoning with multiplication and division, including multiplicative comparison and interpreting remainders. In the final section, students review major work of the grade as they create activities in the format of the warm-ups routines they have encountered throughout the year (Estimation Exploration, Number Talk, and Which One Doesn't Belong?). The sections in this unit are standalone sections, not required to be completed in order. Within a section, lessons can also be completed selectively and without completing prior lessons. The goal is to offer ample opportunities for students to integrate the knowledge they have gained and to practice skills related to the expected fluencies of the grade.

Throughout the unit

The warm-ups throughout the unit develop students' fluency in using the four operations with whole numbers and promote reasoning about the structure of place value. They also promote flexibility with addition and subtraction of fractions, and with multiplication of fractions and whole numbers.

#### Section A Goals

- Solve problems involving fraction equivalence and operating with fractions.

#### Section B Goals

- Add, subtract, multiply, and divide multi-digit numbers using place value understanding.

#### Section C Goals

- Solve problems involving measurement comparison.


#### Section D Goals

- Review the major work of the grade by creating and designing instructional routines.

## How will you gauge student learning?

### Assessments

#### 4.9 End-of-Course Assessment and Resources | Summative | Written Test

 [Grade4-9-End-of-Course-Assessment-and-Resources-assessment.pdf](#)

19 State Standards Assessed

## How will students learn?

### Learning Activities

#### Section A:

In this section, students solve problems that require multiplying fractions by whole numbers and adding and subtracting fractions with the same denominator.

They apply the reasoning strategies developed in the course and their understanding of fractions and equivalence to compare fractions, add and subtract whole numbers and fractions (including mixed numbers), and find sums and differences of tenths and hundredths.

The lessons also prompt students to reason about fractional quantities in a variety of contexts that invite them to share their own cultural experiences and learn about the experiences of others.

#### Section B:

In this section, students deepen their understanding of place value and build their fluency in performing operations on multi-digit numbers.

Students begin by practicing the standard algorithm for addition and subtraction. They also attend to potential errors in using the algorithm, particularly when it is necessary to decompose or compose a base-ten unit multiple times, as in the case when subtracting from a number with zeros. Students consider different strategies for approaching multi-digit subtraction, including by leveraging the relationship between addition and subtraction.

Next, they practice multiplying and dividing multi-digit numbers using algorithms that involve partial products and partial quotients. In both cases, students analyze and make connections across different methods of recording the process of multiplication and division. The work here prepares students to study the standard algorithm for multiplication and for division more closely in grade 5.

#### Section C:

In this section, students practice solving real-world problems using multiplication and division. Throughout the section, students reason with mathematics in different ways. They look for ways to compare quantities with addition or multiplication. They make estimates to simplify a problem or to assess the reasonableness of a statement or value before and after performing calculations. They also continue to reason with diagrams and equations, connecting these representations and the solution to a problem back to the context of the problem.

Students encounter problems that involve division and multiplication with large numbers, but are not expected to divide by multi-digit divisors. All problems can be reasoned and estimated by multiplication, by rounding, and by relating the quantities to nearby multiples of 10 or 100. In one lesson, students have the opportunity to formulate their own problems given a context and some parameters about the situation.

#### Section D:

Throughout the course, students have engaged in warm-up routines such as How Many Do You See, Exploration Estimation, Which One Doesn't Belong, True or False, and Number Talk. This section enables them to apply the mathematics they have learned to design warm-ups that incorporate some of these routines

Each lesson is devoted to a particular routine. Students begin by completing at least two partially created tasks, each with more missing parts to complete than the previous one. They practice anticipating responses that others might give to the prompts they pose.

Along the way, students gain the skills and insights needed to create an activity from scratch or with minimal scaffolding. In each lesson, students have the option to facilitate their activity with another group in the class.

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Differentiated Instruction

Technology Integration

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21st Century Skills

Positive Behavior

CASEL

Collaborative for Academic, Social, and Emotional Learning

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Resources

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Teacher Notes and Reflections

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