North Gibson School Corporation

**Grade 5 Mathematics
North Gibson School Corporation
SY 2022-2023**

Grade 5 Mathematics

	Units of Study			
Unit 1A:	Whole Numbers and Decimals-Place Value	🕐	23 days	1st quarter
Unit 1B:	Whole Numbers and Decimals-Add/Subtract	🕐	6 days	1st quarter
Unit 1C:	Whole Numbers and Decimals-Multiply	🕐	12 days	1st quarter
Unit 1D:	Whole Numbers and Decimals-Divide	🕐	17 days	1st-2nd quarter
Unit 2A:	Fractions-Add/Subtract	🕐	11 days	2nd quarter
Unit 2B:	Fractions-Multiply	🕐	23 days	2nd quarter
Unit 2C:	Fractions-Divide	🕐	11 days	3rd quarter
Unit 4A:	Measurement-Volume (Lessons 26-28)	🕐	12 days	3rd quarter
Unit 3A:	Geometry and Algebraic Thinking-Expressions/Coordinate Plane	🕐	20 days	3rd quarter
Unit 3B:	Geometry and Algebraic Thinking-Classifications/Area	🕐	20 days	4th quarter
Unit 5:	Data Analysis and Statistics	🕐	11 days	4th quarter
Unit 4B:	Measurement- Conversions (Lessons 29-30)	🕐	10 days	4th quarter

Appendices

Appendix A: Proficiency Scale Template

Appendix B: Curriculum Refinement Form

Appendix C: K-12 Math Priority Standards Vertical Articulation

Grade 5 Priority Standards

Priority Standards	**5.AT.8**	Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.
	5.C.1	Multiply multi-digit whole numbers fluently using a standard algorithmic approach.
	5.C.2	Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used.
	5.C.4	Add and subtract fractions with unlike denominators, including mixed numbers.
	5.C.5	Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.
	5.C.7	Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.
	5.C.8	Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.
	5.DS.2	Understand and use measures of center (mean and median) and frequency (mode), to describe a data set.
	5.G.2	Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.
	5.M.5	Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.
	5.NS.1	Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.
	5.NS.2	Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

Standards Breakdown

★: Priority Standards   **●: Supporting Standards**   **—: Additional Standards**

STANDARDS

			UNITS											
			1A	1B	1C	1D	2A	2B	2C	4A	3A	3B	5	4B
Number Sense	1		★											
	2							★						
	3		●											
	4		●											
	5		●											
	6					●								
Computation	1				★									
	2					★								
	3				—									
	4						★							
	5							★						
	6							●						
	7								★					
	8			★	★	★								
	9										—			
Algebraic Thinking	1				●	●								
	2						●							
	3							●						
	4								●					
	5			●	●	●								
	6										●			
	7										—			
	8										★			
Geometry	1											●		
	2											★		
Measurement	1													●
	2							●						
	3											●		
	4									●				
	5									★				
	6									—				
Data Analysis and Statistics	1												—	
	2												★	

Unit 1A: Whole Numbers and Decimals- Place Value (23 days, 1st quarter)

General Description of the Unit

In this unit students will understand place value involving decimals. Students will understand powers of ten and recognize the relationship within a multi-digit number. Students will round decimals up to the thousandths to any given place value and will use a number line to compare and order decimals. In fourth grade, students learned to recognize and compare decimals to the hundredths.

Priority Standards

- **5.NS.1:** Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.

Supporting Standards

- **5.NS.3:** Recognize the relationship 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 inversely, a digit in one place represents 1/10 of what it represents in the place to its left.
- **5.NS.4:** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and 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.
- **5.NS.5:** Use place value understanding to round decimal numbers up to thousandths to any given place value.

Enduring Understandings

- Place-value understanding can be used to easily multiply and divide decimals by powers of ten.
- There is a direct relationship between fractions, whole numbers, mixed numbers, decimals, and percents, and these different representations can be compared and ordered.
- In the base-ten number system, a digit in one place represents 10 times as much as it represents in the place to its right, and inversely, a digit in one place represents 1/10 of what it represents in the place to its left
- Rounding decimals is similar to rounding whole numbers and can be useful for estimating comparisons and computations.

Essential Questions

- What decimal number is greater than 0.016? What decimal number is less than 0.016? What methods could be used to compare these different numbers?
- How are .5 and .500 similar? How are they different? How do the zeros after the decimal point affect the value of the number?
- How do you compare and order decimals, percents, and fractions?
- How is 37 related to 3.7? How is 37 related to 370?
- What patterns can you describe for multiplying or dividing numbers by powers of ten?

Key Concepts

- I can use a number line to order fractions, decimals, and mixed numbers. (5.NS.1)
- I can use a number line to compare fractions, decimals, and mixed numbers. (5.NS.1)
- I can use greater than, less than, and equal to symbols to record the results of comparisons of fractions, decimals, and mixed numbers. (5.NS.1)

Related Concepts

- I can explain that any digit is 10 times larger in value than the digit to its right. (5.NS.3)
- I can explain that any digit is 1/10 the value than any digit to its left. (5.NS.3)
- I can show that when numbers are multiplied by powers of 10, there is a pattern in the number of zeros in the resulting product. (5.NS.4)
- I can round decimal numbers up to thousandths, to any given place value. (5.NS.5)

Vocabulary

- Decimal point
- Mixed number
- Multiple
- Number line
- Place value
- Power of 10
- Rounding
- Thousandths

Mathematical Processes

- PS.6 Attend to precision.
- PS.7 Look for and make use of structure.

Resources

Proficiency Scales
- **5.NS.1 - template**

Digital
- **IDOE Examples/Tasks 5.NS.1**
- **IDOE Examples/Tasks 5.NS.3**
- **IDOE Examples/Tasks 5.NS.4**
- **IDOE Examples/Tasks 5.NS.5**

Manipulatives
- **Addition Calculator w/ Steps**
- **Decimal Chart**
- **Fraction Board**
- **Fraction Strips**
- **Interactive Decimal Chart**
- **Long Division Calculator w/ Steps**
- **Money and Decimals**
- **Multiplication Calculator w/ Steps**
- **Number Line**
- **Percent, Fraction, Decimal**
- **Percentage Strips**
- **Subtraction Calculator w/ Steps**

School Resources

Textbook

Textbook Name: Ready Math, Second Edition:

Notes:
Number Sense Supplement: Decimals to the thousandths

In general, pacing was estimated with Ready Math recommendations for lessons, with one additional day added for each quiz and assessment.

Lessons:

Lesson 0: Lessons for the First Five Days (3 days-No Quiz)
Lesson 1: Understand Place Value (3 days)
Lesson 2: Understand Powers of Ten (3 days)
Lesson 3: Round Decimals (3 days)
Lesson 4: Compare Numbers (5 days)

Formative Assessments

Lesson 1 Quiz
Lesson 2 Quiz
Lesson 3 Quiz
Lesson 4 Quiz

Unit 1A Assessment

1 Math in Action Day

Unit 1B: Whole Numbers and Decimals- Add/Subtract (6 days, 1st quarter)

General Description of the Unit
In this unit students will learn to add and subtract decimals to the hundredths place. Students will use models, drawings, and strategies and explain their reasoning when adding and subtracting with decimals. They will solve real-world problems involving adding and subtracting decimals including money in decimal notation.

Priority Standards	Supporting Standards
• **5.C.8: Add, subtract**, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.	• **5.AT.5:** Solve real-world problems involving **addition, subtraction**, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem).

Enduring Understandings	Essential Questions
• Adding and subtracting decimals is much like adding and subtracting whole numbers. Aligning place-values in computations is key with decimal addition and subtraction, as it is with whole number addition and subtraction. • It is important to understand the context of the problem to determine which operation(s) is needed and if the solution is reasonable.	• How are decimal addition and subtraction problems similar to whole number addition and subtraction problems? How are they different? • When might you use decimal addition and subtraction in your life?

Key Concepts	Related Concepts	Vocabulary
• I can add and subtract to hundredths using models or drawings. (5.C.8) • I can add and subtract decimals to hundredths using strategies based on place value or properties of operations. (5.C.8) • I can explain the strategy and method I used to add and subtract decimals to hundredths, and why I chose that specific strategy. (5.C.8)	• I can solve real-world problems that involve adding and subtracting numbers with decimals to the hundredths. (5.AT.5) • I can solve real-world problems that involve computation with money in decimal notation using equations to represent the problem. (5.AT.5) • I can solve real-world problems that involve computation with money in decimal notation using models or drawings to represent the problem. (5.AT.5) • I can solve real-world problems that involve computation with money in decimal notation using strategies based on place value or properties of operations to represent the problem. (5.AT.5)	• Place value

Mathematical Processes
• PS.1 Make sense of problems and persevere in solving them.
• PS.6 Attend to precision.

Resources

Proficiency Scales	Digital	Manipulatives
• **5.AT.5** • **5.C.8- template**	• **IDOE Examples/Tasks 5.C.8** • **IDOE Examples/Tasks 5.AT.5**	• **Addition Calculator w/ Steps** • **Interactive Decimal Chart** • **Long Division Calculator w/ Steps** • **Money and Decimals** • **Multiplication Calculator w/ Steps** • **Subtraction Calculator w/ Steps**

School Resources	
Textbook Lessons: Lesson 5: Add and Subtract Decimals (5 days)	**Formative Assessments** Unit 1B Assessment

Unit 1C: Whole Numbers and Decimals- Multiply (12 days, 1st quarter)

General Description of the Unit
In this unit students will learn to multiply multi-digit numbers fluently using a standard algorithmic approach. They will solve real-world problem involving multiplication of whole numbers. Students will then learn to multiply decimals to the hundredths using models, drawings, and strategies and explain their reasoning.

Priority Standards	Supporting Standards
• **5.C.1:** Multiply multi-digit whole numbers fluently using a standard algorithmic approach. • **5.C.8:** Add, subtract, **multiply**, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.	• **5.AT.1:** Solve real-world problems involving **multiplication** and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem. • **5.AT.5:** Solve real-world problems involving addition, subtraction, **multiplication**, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem). **Additional Standards** • **5.C.3:** Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

Enduring Understandings	Essential Questions
• There are multiple methods that can be used to find products, and different strategies may be useful in different problems. • Multiplying decimals is similar to multiplying whole numbers, and the placement of the decimal in the product is determined by the placement of the decimal in the factors. Estimation is also important for verifying products. • Place-value understanding can be used to easily multiply decimals by powers of ten. • Many real-world situations require multiplication of whole numbers. It is important to understand the context of the problem and use number sense to determine the reasonableness of solutions and interpret remainders.	• How are decimal multiplication and whole number multiplication similar? How are they different? • When might you use decimal multiplication in your life? • What are real-world examples of when you might have to multiply large numbers?

Key Concepts	Related Concepts	Vocabulary
• I can fluently multiply multi-digit whole numbers. (5.C.1) • I can select an appropriate algorithm to multiply multi-digit whole numbers. (5.C.1) • I can multiply decimals to hundredths using models or drawings. (5.C.8) • I can multiply decimals to hundredths using strategies based on place value or properties of operations. (5.C.8) • I can explain the strategy and method I used to multiply decimals to hundredths, and why I chose that specific strategy. (5.C.8)	• I can solve real-world problems that involve multiplication of whole numbers. (5.AT.1) • I can use equations to represent real-world problems involving multiplication of whole numbers. (5.AT.1) • I can solve real-world problems that involve multiplying numbers with decimals to the hundredths. (5.AT.5) • I can compare the size of a product to the size of one factor on the basis of the size of the other factor. (5.C.3) • I can compare the size of a product to the size of the factors without	• Algorithm • Factor • Place value • Product • Quotient • Remainder • Whole number

	performing the indicated multiplication. (5.C.3)	

Mathematical Processes

- PS.1 Make sense of problems and persevere in solving them.
- PS.6 Attend to precision.

Resources

Proficiency Scales	**Digital**	**Manipulatives**
• **5.AT.1** • **5.AT.5** • **5.C.1 - template** • **5.C.8 - template**	• **IDOE Examples/Tasks 5.C.1** • **IDOE Examples/Tasks 5.C.8** • **IDOE Examples/Tasks 5.AT.1** • **IDOE Examples/Tasks 5.AT.5** • **IDOE Examples/Tasks 5.C.3**	• **Addition Calculator w/ Steps** • **Interactive Decimal Chart** • **Long Division Calculator w/ Steps** • **Money and Decimals** • **Multiple Representation Math Fact Cards** • **Multiplication Calculator w/ Steps** • **Multiplication Chart** • **Partial Product Finder** • **Subtraction Calculator w/ Steps**

School Resources

Textbook	**Formative Assessments**
Lessons: Lesson 6: Multiply Multi-Digit Numbers (5 days) Lesson 7: Multiply Decimals (5 days)	1 day review Lesson 6-7 Quiz

Unit 1D: Whole Numbers and Decimals- Divide (17 days, 1st quarter-2nd quarter)

General Description of the Unit
In this unit students will divide multi-digit numbers with up to four-digit dividends and two-digit divisors using place-value strategies and explain their reasoning. Students will determine which operation to use to solve real-world problems and use strategies to divide multi-digit numbers. Students will then learn to divide decimals to hundredths using models or drawings and strategies and explain their reasoning. Finally students will understand percents as part of a hundred and represent them using visual models. In fourth grade, students learned to divide up to four-digit dividends and one-digit divisors and worked with decimals in relation to money.

Priority Standards

- **5.C.2:** Find whole-number quotients and remainders with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning used.
- **5.C.8:** Add, subtract, multiply, and **divide** decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

Supporting Standards

- **5.AT.1:** Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.
- **5.AT.5:** Solve real-world problems involving addition, subtraction, multiplication, and **division** with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem).
- **5.NS.6:** Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).

Enduring Understandings

- There are multiple methods that can be used to find quotients, and different strategies may be useful in different problems.
- Using rounding and multiplication estimation can be helpful steps in estimating quotients.
- Dividing with decimals is similar to dividing whole numbers and the placement of the decimal in the quotient is determined by the placement in the dividend and divisor. Estimation is also important for verifying quotients.
- Place-value understanding can be used to easily divide decimals by powers of ten.
- Many real-world situations require decimal computations. It is important to understand the context of the problem to determine which operation(s) is needed and if the solution is reasonable.
- Percents represent parts per 100.

Essential Questions

- What is your favorite strategy for solving a division problem; why?
- How is estimation useful in division?
- How are multiplication and division similar? How are they different? When do you use each in your lives at home?
- How are decimal division and whole number division similar? How are they different? When might you use decimal division in your life?
- How do you determine what operation to use when solving a word problem?
- What are real-world situations where you encounter percents? How are they more or less helpful than fractions or decimals?

Key Concepts

- I can find whole-number quotients involving dividends up to four digits and divisors up to two digits. (5.C.2)
- I can select and use an appropriate strategy including, place value, properties of operations, and the relationship between multiplication and division to solve division problems. (5.C.2)
- I can describe and explain why I chose a given strategy to solve division problems. (5.C.2)
- I can divide decimals to hundredths using models or drawings. (5.C.8)

Related Concepts

- I can solve real-world problems that involve division of whole numbers. (5.AT.1)
- I can use equations to represent real-world problems involving division of whole numbers. (5.AT.1)
- I can explain how the remainder of a real-world problem involving division impacts the solution of the problem. (5.AT.1)
- I can solve real-world problems that involve dividing numbers with decimals to the hundredths. (5.AT.5)

Vocabulary

- Dividend
- Divisor
- Percent
- Place value
- Product
- Quotient
- Remainder
- Whole number

- I can divide decimals to hundredths using strategies based on place value or properties of operations. (5.C.8)
- I can explain the strategy and method I used to divide decimals to hundredths, and why I chose that specific strategy. (5.C.8)
- I can solve real-world problems that involve computation with money in decimal notation using equations to represent the problem. (5.AT.5)
- I can solve real-world problems that involve computation with money in decimal notation using models or drawings to represent the problem. (5.AT.5)
- I can model percents as part of 100 using pictures, diagrams, and other visual models. (5.NS.6)
- I can interpret percents as part of 100 using pictures, diagrams, and other visual models. (5.NS.6)

Mathematical Processes

- PS.1 Make sense of problems and persevere in solving them.
- PS.6 Attend to precision.

Resources

Proficiency Scales

- **5.AT.1**
- **5.AT.5**
- **5.C.2 - template**
- **5.C.8 - template**
- **5.NS.6**

Digital

- **IDOE Examples/Tasks 5.C.2**
- **IDOE Examples/Tasks 5.C.8**
- **IDOE Examples/Tasks 5.AT.1**
- **IDOE Examples/Tasks 5.AT.5**
- **IDOE Examples/Tasks 5.NS.6**

Manipulatives

- **Addition Calculator w/ Steps**
- **Interactive Decimal Chart**
- **Long Division Calculator w/ Steps**
- **Money and Decimals**
- **Multiple Representation Math Fact Cards**
- **Multiplication Calculator w/ Steps**
- **Multiplication Chart**
- **Partial Product Finder**
- **Subtraction Calculator w/ Steps**

School Resources

Textbook

Lessons:

Lesson 8: Divide Multi-Digit Numbers (5 days)
Lesson 9: Divide Decimals (5 days)
Lesson 10: Understand Percent (3 days)

Formative Assessments

Lesson 8-9 Quiz
Lesson 10 Quiz

1 day review

Unit 1D Assessment

Unit 2A: Fractions- Add/Subtract (11 days, 2nd quarter)

General Description of the Unit

In this unit students will review understanding fractions including equivalent fractions, mixed numbers, improper fractions, simplifying fractions and adding and subtracting fractions with like denominators. Students will then learn to add and subtract fractions with unlike denominators and solve real-world problems involving adding and subtracting fractions.

Priority Standards

- **5.C.4:** Add and subtract fractions with unlike denominators, including mixed numbers.

Supporting Standards

- **5.AT.2:** Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

Enduring Understandings

- Common denominators are important when adding and subtracting fractions and mixed numbers, and equivalent fractions can be used to create common denominators.
- Fraction number sense should be used to estimate fraction computations and determine reasonableness of sums and differences.
- It may be necessary to regroup a whole number and convert between improper fractions and mixed numbers to add and subtract mixed numbers.
- Many real-world situations require fraction addition and subtraction. It is important to understand the context of the problem to determine which operation(s) is needed and if the solution is reasonable.

Essential Questions

- Why are common denominators important in fraction addition and subtraction?
- How do you know if a sum or difference you've found is reasonable? How can you check your solutions?
- Why is it important to know how to add and subtraction fractions? What examples can you think of where you would need to add and subtract fractions in your life?

Key Concepts

- I can add fractions with unlike denominators. (5.C.4)
- I can subtract fractions with unlike denominators. (5.C.4)
- I can add mixed numbers with unlike denominators. (5.C.4)
- I can subtract mixed numbers with unlike denominators. (5.C.4)

Related Concepts

- I can solve real-world problems that involve adding and subtracting fractions referring to the same whole and with unlike denominators. (5.AT.2)
- I can use visual fraction models and equations to represent real-world problems involving addition and subtraction of fractions referring to the same whole and with unlike denominators. (5.AT.2)
- I can use fraction benchmarks to help me mentally estimate sums and differences and to assess whether my answers are reasonable. (5.AT.2)
- I can use number sense of fractions to estimate sums and differences mentally and to assess whether my answers are reasonable. (5.AT.2)

Vocabulary

- Benchmarks
- Denominator
- Fraction
- Fraction model
- Mixed number
- Numerator

Mathematical Processes

- PS.3 Construct convincing arguments and critique the reasoning of others.
- PS.4 Model with mathematics.

Resources		
Proficiency Scales • **5.AT.2** • **5.C.4 - template**	**Digital** • **IDOE Examples/Tasks 5.C.4** • **IDOE Examples/Tasks 5.AT.2**	**Manipulatives** • **Fraction Strips** • **Fractions** • **Mixed Numbers Calculator w/ Steps** • **Online Improper Fraction and Mixed Number Builder**

School Resources	
Textbook ==Notes:== ==Supplement: equivalent fractions, converting between mixed numbers and improper fractions, simplifying fractions, adding and subtracting fractions with like denominators, and renaming whole numbers.== Lessons: Supplement: Understanding Fractions (5 days) Lesson 11: Add and Subtract Fractions with Unlike Denominators (5 days)	**Formative Assessments** Lesson 11 Quiz

Unit 2B: Fractions- Multiply (23 days, 2nd quarter)

General Description of the Unit
In this unit students will explain different interpretations of fractions including as parts of a whole, parts of a set, and division of whole numbers by whole numbers. Students will then be introduced to multiplying fractions using visual models and numbers. Students will understand multiplication as scaling and learn to multiply fractions in word problems. Students will be able to find the area of a rectangle with fractional sides by multiplying fractional side lengths.

Priority Standards

- **5.C.5:** Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.
- **5.NS.2:** Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

Supporting Standards

- **5.AT.3:** Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).
- **5.C.6:** Explain why multiplying a positive number by a fraction greater than one results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, $a/b = (n \times a)/(n \times b)$, to the effect of multiplying a/b by one.
- **5.M.2:** Find the area of a rectangle with fractional side lengths by modeling with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

Enduring Understandings

- Visual fraction models can provide context for calculations taking place in equations involving fractions.
- When multiplying mixed numbers, you cannot just multiply the whole numbers and multiply the fractions. This would result in partial products. It may be necessary to convert between mixed numbers and improper fractions.
- Many real-world situations require fraction multiplication. It is important to understand the context of the problem and use number sense to determine reasonableness of solutions.
- Multiplying fractions and whole numbers can be represented by repeated addition, and this connection can help to create an understanding of fraction multiplication.
- If a fraction, greater than one is multiplied by a number greater than one, the product will be larger than the original number. If a fraction, less than one is multiplied by a number greater than one, the product will be less than the original number.
- The area of a rectangle with fractional side lengths can be found by multiplying the side lengths. If given area and a side length, division can be used to find a missing side length.

Essential Questions

- What are common mistakes to avoid when multiplying fractions?
- How is fraction multiplication related to fraction addition?
- How can you represent the fraction 5/7 as part of a whole? As part of a set? As a division problem?
- What are real-world examples of when you would need to multiply fractions and mixed numbers?
- How can you explain what is happening when a fraction is multiplied by a whole number, or when a fraction is multiplied by another fraction?
- When might you need to find area with fractional side lengths in real life?

Key Concepts	Related Concepts	Vocabulary
• I can use visual fraction models to multiply a fraction by a fraction or whole number. (5.C.5)	• I can solve real-world problems that involve multiplying fractions including mixed numbers using visual fraction models. (5.AT.3)	• Area • Area formula • Equivalent • Fraction

- I can use numbers to multiply a fraction by a fraction or whole number. (5.C.5)
- I can interpret fractions as parts of a whole. (5.NS.2)
- I can interpret fractions as parts of a set. (5.NS.2)

- I can solve real-world problems that involve multiplying fractions including mixed numbers using equations to represent the problem. (5.AT.3)
- I can explain why multiplying a positive number by a fraction greater than 1 creates a product greater in value than the given number. (5.C.6)
- I can explain why multiplying a positive number by a fraction less than 1 produces a product smaller than the given number. (5.C.6)
- I can explore the concept of fraction equivalence. (5.C.6)
- I can relate fraction equivalence to the effect of multiplying a fraction by 1. (5.C.6)
- I can find the area of rectangles with fractional side lengths using unit squares. (5.M.2)
- I can find the area of rectangles with fractional side lengths by multiplying the side lengths. (5.M.2)
- I can show that the area of a rectangle found by using unit squares is equal to the area of a rectangle found by multiplying the side lengths. (5.M.2)
- I can represent fraction products as rectangular areas. (5.M.2)

- Fraction model
- Mixed number
- Model
- Parts of a set
- Parts of a whole
- Product
- Unit squares
- Whole number

Mathematical Processes
- PS.6 Attend to precision.
- PS.7 Look for and make use of structure.

Resources

Proficiency Scales
- **5.AT.3**
- **5.C.5 - template**
- **5.NS.2**

Digital
- **IDOE Examples/Tasks 5.C.5**
- **IDOE Examples/Tasks 5.NS.2**
- **IDOE Examples/Tasks 5.AT.3**
- **IDOE Examples/Tasks 5.C.6**
- **IDOE Examples/Tasks 5.M.2**

Manipulatives
- **Fraction Board**
- **Fraction Strips**
- **Mixed Numbers Calculator w/ Steps**
- **Number Line**
- **Percent, Fraction, Decimal**
- **Percent, Fraction, Decimals**

School Resources	
Textbook	**Formative Assessments**
Lessons: Lesson 12: Interpretations of Fractions (5 days) Lesson 13: Multiply Fractions (5 days) Lesson 14: Understand Multiplication as Scaling (3 days) Lesson 15: Multiply Fractions in Word Problems (5 days)	Lesson 12 Quiz Lesson 13-14 Quiz Lesson 15 Quiz 1 day review Unit 2B Assessment

Unit 2C: Fractions- Divide (11 days, 3rd quarter)

General Description of the Unit
In this unit students will be introduced to fraction division and use visual fraction models and numbers to divide unit fractions and whole numbers. Students will then solve real-world problems involving division of unit fractions.

Priority Standards	Supporting Standards
• **5.C.7:** Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.	• **5.AT.4:** Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).

Enduring Understandings	Essential Questions
• Whole numbers can be divided into unit fraction partitions using visual fraction models and numerical computations. • Unit fractions can be divided by whole numbers using visual fraction models and numerical computations. • Number sense can be used to estimate quotients in fraction division. • Many real-world situations require division of unit fractions by whole numbers and whole number by unit fractions. It is important to understand the context of the problem and use number sense to determine reasonableness of solutions.	• How can you compare the value of the dividend, divisor, and quotient when dividing a whole number by a unit fraction? • What is the role of multiplication in fraction division? • Do you prefer visual models or numerical computations to solve problems involving fraction division; why? When might you need to use these skills in your life? • What are real-world situations where you would need to divide a unit fraction by a whole number? A whole number by a unit fraction? • Can you draw a model to represent fraction division?

Key Concepts	Related Concepts	Vocabulary
• I can use visual fraction models to divide a unit fraction by a non-zero whole number. (5.C.7) • I can use numbers to divide a unit fraction by a non-zero whole number. (5.C.7) • I can use visual fraction models to divide a non-zero whole number by a unit fraction. (5.C.7) • I can use numbers to divide a non-zero whole number by a unit fraction. (5.C.7)	• I can solve real-world problems that involve dividing unit fractions by non-zero whole numbers using visual fraction models. (5.AT.4) • I can solve real-world problems that involve dividing unit fractions by non-zero whole numbers using equations to represent the problem. (5.AT.4)	• Fraction model • Reciprocal • Unit fraction • Whole number

Mathematical Processes
• PS.4 Model with mathematics. • PS.7 Look for and make use of structure.

Resources		
Proficiency Scales	**Digital**	**Manipulatives**
• **5.AT.4** • **5.C.7 - template**	• **IDOE Examples/Tasks 5.C.7** • **IDOE Examples/Tasks 5.AT.4**	• **Fraction Strips** • **Fractions** • **Mixed Numbers Calculator w/ Steps** • **Online Improper Fraction and Mixed Number Builder**

School Resources	
Textbook Lessons: Lesson 16: Understand Division with Unit Fractions (3 days) Lesson 17: Divide Unit Fractions in Word Problems (5 days)	**Formative Assessments** Lesson 16 Quiz 1 day Review Unit 2C Assessment

Unit 4A: Measurement (12 days, 3rd quarter)

General Description of the Unit

In this unit students will understand and find volume of rectangular prisms using formulas. Students will then find the volume of composite figures composed of two non-overlapping parts. Students will solve real-world problems involving volume of composite figures.

Priority Standards	Supporting Standards
• **5.M.5:** Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.	• **5.M.4:** Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths or multiplying the height by the area of the base.
	Additional Standards
	• **5.M.6:** Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.

Enduring Understandings	Essential Questions
• The volume of rectangular prisms can be found by using the formula $V = l \times w \times h$ or $V = b \times h$, or by filling it completely with unit cubes. • Rectangular prisms with different dimensions can have the same volume. • Volume of complex rectangular prisms is similar to area of complex figures. You can find the volume of sections and add those sections together.	• What are real-world examples of when you would need to find the volume of something? • How are the formulas $V = l \times w \times h$ or $V = b \times h$ similar? How are they different? • How are area and volume similar? How are they different? • Does the volume of an object change if we measure using different units?

Key Concepts	Related Concepts	Vocabulary
• I can use the formulas $V = l \times w \times h$ and $V = B \times h$ to find the volume of right rectangular prisms with whole number edge lengths. (5.M.5) • I can solve real-world problems that involve finding the volume of rectangular prisms with whole number edge lengths. (5.M.5)	• I can use unit cubes to find the volume of a right rectangular prism with whole number side lengths. (5.M.4) • I can show how the volume of a prism filled with unit cubes is the same as if found by multiplying the height by the area of the base. (5.M.4) • I can find the volume of solid figures composed of two non-overlapping right rectangular prisms by finding the sum of the volumes of the individual prisms. (5.M.6) • I can decompose solid figures made up of two right rectangular prisms and find their individual volume. (5.M.6) • I can solve real-world problems that involve solid figures made up of two right rectangular prisms. (5.M.6)	• Base • Edge • Rectangular prism • Unit cube • Volume • Volume formula

Mathematical Processes

• PS.2 Reason abstractly and quantitatively.
• PS.7 Look for and make use of structure.

Resources		
Proficiency Scales	**Digital**	**Manipulatives**
• **5.M.5**	• **IDOE Examples/Tasks 5.M.5** • **IDOE Examples/Tasks 5.M.4** • **IDOE Examples/Tasks 5.M.6**	• **Cubes** • **Volume**
School Resources		
Textbook ==Notes:== ==Moving ahead in sequence== Lessons: Lesson 26: Understand Volume (3 days) Lesson 27: Find Volume Using Formulas (3 days) Lesson 28: Find Volume of Composite Figures (3 days)	**Formative Assessments** Lesson 26 and 27 Quiz Unit 4A Assessment 1 Day Math in Action	

Unit 3A: Geometry and Algebraic Thinking (20 days, 3rd quarter)

General Description of the Unit

In this unit students will be introduced to linear expressions and will learn to graph whole number coordinates on a coordinate plane and graph ordered pairs in the first quadrant. Students will evaluate expressions using properties of addition and multiplication.

Priority Standards	Supporting Standards
• **5.AT.8:** Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.	• **5.AT.6:** Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
	Additional Standards
	• **5.AT.7:** Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
	• **5.C.9:** Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.

Enduring Understandings	Essential Questions
• Expressions can be written using variables, often in the form of letters, in place of numbers whose value can be discovered by evaluating the expression.	• What are variables? How are they used to represent a relationship between numbers?
• Coordinates are graphed on a coordinate plane. The first coordinate represents your x-value, and the second coordinate represents your y-value.	• What does it mean to evaluate an expression?
• Parentheses and brackets in an equation indicate that the problems within the grouping symbols are solved first in the equation.	• How would you explain to someone how to graph on a coordinate plane? When might it be useful to graph on a coordinate plane?
	• What is the relationship between a coordinate plane and a number line?
	• Why are parentheses and brackets used in an equation?

Key Concepts	Related Concepts	Vocabulary
• I can use up to two variables to write linear expressions. (5.AT.8)	• I can graph points with whole number coordinates on a coordinate plane. (5.AT.6)	• Associative Property of Addition
• I can define the variables to use when writing expressions that arise from real-world problems. (5.AT.8)	• I can show how each coordinate is the distance from the origin on each axis. (5.AT.6)	• Associative Property of Multiplication
• I can evaluate linear expressions in real-world problems for given values. (5.AT.8)	• I can identify which coordinate corresponds with which axis. (5.AT.6)	• Axis
	• I can represent real-world problems by graphing ordered pairs in the first quadrant. (5.AT.7)	• Brackets
		• Commutative Property of Addition
	• I can represent real-world equations by graphing ordered pairs in the first quadrant. (5.AT.7)	• Commutative Property of Multiplication
	• I can interpret the values of the coordinates of a point in context. (5.AT.7)	• Coordinate
		• Coordinate plane
	• I can use the commutative properties of addition and multiplication to evaluate	• Distributive Property
		• Evaluate
		• Linear expression
		• Ordered pair
		• Parentheses
		• Quadrant
		• Variable
		• x-axis
		• y- axis

	expressions involving whole numbers. (5.C.9)
	• I can use the associative properties of addition and multiplication to evaluate expressions involving whole numbers. (5.C.9)
	• I can use the distributive property to evaluate expressions involving whole numbers. (5.C.9)

Mathematical Processes
• PS.3 Construct convincing arguments and critique the reasoning of others.
• PS.4 Model with mathematics.

Resources

Proficiency Scales	Digital	Manipulatives
• **5.AT.8**	• **IDOE Examples/Tasks 5.AT.8** • **IDOE Examples/Tasks 5.AT.6** • **IDOE Examples/Tasks 5.AT.7** • **IDOE Examples/Tasks 5.C.9**	• **Desmos** • **Graphing Coordinates**

School Resources

Textbook	Formative Assessments
Lessons: Lesson 18: Evaluate and Write Numerical Expressions (5 days) Lesson 19: Write and Evaluate Linear Expressions (5 days) Lesson 20: Understand the Coordinate Plane (3 days) Lesson 21: Graph Points in the Coordinate Plane (4 days)	Lesson 18-19 Quiz Lesson 20-21 Quiz Unit 3A Assessment

Unit 3B: Geometry and Algebraic Thinking (20 days, 4th quarter)

General Description of the Unit

In this unit students will identify and classify polygons based on properties. Students will identify, describe, and draw triangles and circles using rulers and compasses. Students will also develop and use formulas for the area of triangles, parallelograms and trapezoids as well as solve real-world problems involving the perimeter and area of these figures. In fourth grade, students applied area and perimeter formulas to rectangles.

Priority Standards	Supporting Standards
• **5.G.2:** Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.	• **5.G.1:** Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter. • **5.M.3:** Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.

Enduring Understandings	Essential Questions
• Triangles can be classified based on their angle measures into categories such as right, acute, and obtuse. • Triangles can be classified by their side lengths as either equilateral, isosceles, or scalene. • Radius and diameter are related and represent measurements of a circle. • Formulas to find perimeter and area of shapes can be Googled and being able to choose, interpret, and use a formula is often more important than remembering the specific formula. • Finding the areas of rectangles, triangles, parallelograms, and trapezoids are related to one another, and partitioning shapes with visual models can demonstrate these similarities. • Solving expressions, understanding variables, order of operations, and the commutative and associative properties are all important skills for interpreting and using formulas.	• How are radius and diameter related? • What are different ways to classify a triangle? • How is finding the area of a rectangle, triangle, parallelogram and trapezoid similar? How are they different? Which shapes are most closely related? Most different? • If you could only remember how to find the area of two different shapes, which two would you choose and why? • Do you think you will need to use concepts of perimeter or area more in your life? Why? What are real-world examples of when you might need to find these?

Key Concepts	Related Concepts	Vocabulary
• I can identify polygons such as quadrilaterals, pentagons, and hexagons based on their properties. (5.G.2) • I can classify polygons such as quadrilaterals, pentagons, and hexagons based on their properties. (5.G.2) • I can identify and classify triangles into the following categories: equilateral, isosceles, scalene, right, acute, and obtuse based on their angle measures and sides. (5.G.2) • I can classify polygons in hierarchies based on their properties. (5.G.2)	• I can identify and describe right, acute, and obtuse triangles. (5.G.1) • I can identify and describe circles. (5.G.1) • I can draw right, acute, and obtuse triangles. (5.G.1) • I can use both appropriate tools and technology to draw triangles. (5.G.1) • I can draw circles using appropriate tools and technology. (5.G.1) • I can explain the relationship between the radius and diameter of a circle. (5.G.1) • I can develop formulas through investigation for the area of triangles. (5.M.3) • I can develop formulas through investigation for the area of parallelograms. (5.M.3)	• Acute triangle • Area • Compass • Diameter • Drawing triangle • Equilateral triangle • Hexagon • Isosceles triangle • Obtuse triangle • Parallelogram • Pentagon • Perimeter • Polygons • Quadrilateral • Radius • Right triangle • Scalene triangle • Straightedge

| | | • Trapezoid |
| | | • Triangle |

- I can develop formulas through investigation for the area of trapezoids. (5.M.3)
- I can use a formula to find the area of triangles. (5.M.3)
- I can use a formula to find the area of parallelograms. (5.M.3)
- I can use a formula to find the area of trapezoids. (5.M.3)
- I can solve real-world problems that involve the perimeter and area of triangles, parallelograms, and trapezoids. (5.M.3)
- I can identify and use appropriate units when finding the perimeter and area of triangles, parallelograms, and trapezoids. (5.M.3)

Mathematical Processes
- PS.2 Reason abstractly and quantitatively.
- PS.5 Use tools appropriately.

Resources

Proficiency Scales	**Digital**	**Manipulatives**
• **5.G.2**	• **IDOE Examples/Tasks 5.G.2**	• **Area and Perimeter Explorer**
• **5.M.3**	• **IDOE Examples/Tasks 5.G.1**	• **Mixed Numbers Calculator**
	• **IDOE Examples/Tasks 5.M.3**	

School Resources

Textbook	**Formative Assessments**
Lessons:	Lesson 23 Quiz
	Lesson 25 Quiz
Lesson 22: Identify Two-Dimensional Figures (5 days)	
Lesson 23: Understand Properties of Two-Dimensional Figures (3 days)	Unit 3 Assessment
Lesson 24: Find Area of Triangles and Parallelograms (5 days)	
Lesson 25: Find Area of Trapezoids (4 days)	

Unit 5: Data Analysis and Statistics (11 days, 4th quarter)

General Description of the Unit

In this unit students will continue to build their understanding of analyzing and interpreting data using tables, line plots, bar graphs, and line graphs. Students will be introduced to mean, median, and mode to describe a data set.

Priority Standards

- **5.DS.2:** Understand and use measures of center (mean and median) and frequency (mode), to describe a data set.

Supporting Standards

- **5.DS.1:** Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.

Enduring Understandings

- Mean and median represent measures of center within a data set and mode represents frequency within a data set. These calculations are impacted differently by outliers.
- Mean, median, and mode can be used to represent and describe a data set with one numerical value. These are often different values and not all data sets have a mode.
- Measures of center are often referred to as "averages" and they can be used strategically to make a point about a data set to different audiences.
- Data can be represented in a variety of ways depending on the needs or goals of the presenter.
- Creating relevant, valid questions to be explored through a variety of methods is imperative for meaningful data collection.

Essential Questions

- If we were to look at all of the test scores on the last math test, how could we choose one number to communicate how the class did on the test?
- How does the audience impact which average someone might choose?
- How do outliers affect averages?
- When would you collect data using a survey? An experiment? Observations? How do these methods differ? In what ways are they similar?

Key Concepts

- I can find the mean of given data set in order to describe it. (5.DS.2)
- I can find the median of a given data set in order to describe it. (5.DS.2)
- I can find the mode of a given data set in order to describe it. (5.DS.2)
- I can recognize the difference between the mean, median, and mode of a data set. (5.DS.2)

Related Concepts

- I can create questions that can be answered with data. (5.DS.1)
- I can make predictions about data collected from a question. (5.DS.1)
- I can use observations and surveys to collect data. (5.DS.1)
- I can use experiments to collect data. (5.DS.1)
- I can represent data using tables, including frequency tables. (5.DS.1)
- I can represent data using line plots and line graphs. (5.DS.1)
- I can represent data using bar graphs. (5.DS.1)
- I can explain the difference between categorical and numerical data and which representation is appropriate for each. (5.DS.1)

Vocabulary

- Bar graph
- Data
- Frequency
- Frequency table
- Hypothesis
- Line graph
- Line plot
- Mean
- Measures of center
- Median
- Mode
- Observe
- Prediction
- Survey

Mathematical Processes

- PS.7 Look for and make use of structure.
- PS.8 Look for and express regularity in repeated reasoning.

Resources		
Proficiency Scales	**Digital**	**Manipulatives**
• **5.DS.2**	• **IDOE Examples/Tasks 5.DS.2** • **IDOE Examples/Tasks 5.DS.1**	• **Averages Activity** • **Dice and Spinners** • **Graph Creator**
School Resources		
Textbook Lessons: Lesson 31: Represent and Interpret Numerical and Categorical Data (3 days) Lesson 32: Understand Mean, Median, and Mode (5 days)	**Formative Assessments** Lesson 31 Quiz Lesson 32 Quiz Unit 5 Assessment	

Unit 4B: Measurement (10 days, 4th quarter)

General Description of the Unit		
In this unit students will make conversions within a given measurement system and use the conversions to solve real-world problems.		

Priority Standards	Supporting Standards
N/A	• **5.M.1:** Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.

Enduring Understandings	Essential Questions
• You can use formulas and conversion factors to convert between measurement units within the same measurement system.	• When might it be useful to convert measurements in a system to solve a real-world problem?

Key Concepts	Related Concepts	Vocabulary
N/A	• I can convert among different sized standard measurement units within a given measurement system. (5.M.1) • I can solve real-world problems using conversions within a given measurement system. (5.M.1)	• Measurement system • Metric System • US Customary Units

Mathematical Processes
• PS.6 Attend to precision. • PS.7 Look for and make use of structure.

Resources		

Proficiency Scales	Digital	Manipulatives
N/A	• **IDOE Examples/Tasks 5.M.1**	**N/A**

School Resources	

Textbook	Formative Assessments
Lessons: Lesson 29: Convert Measurement Units (4 days) Lesson 30: Solve Word Problems Involving Conversions (5 days)	Lesson 29-30 Quiz