Grade 4 Mathematics
North Gibson School Corporation
SY 2022-2023

Grade 4 Mathematics

Units of Study			
Unit 1:	Whole Numbers & Addition/Subtraction	17 days	1st quarter
Unit 2A:	Operations and Algebraic Thinking- **Multiplication**	24 days	1st quarter
Unit 2B:	Operations and Algebraic Thinking- **Division**	24 days	2nd quarter
Unit 3A:	Fractions- **Number Sense**	19 days	2nd quarter
Unit 3B:	Fractions- **Computation**	16 days	3rd quarter
Unit 3C:	Fractions- **Decimals**	11 days	3rd quarter
Unit 4A:	Measurement and Data Analysis- **Measurements & Line Plots**	19 days	3rd quarter
Unit 4B:	Measurement and Data Analysis- **Area and Perimeter**	6 days	4th quarter
Unit 5:	Geometry	21 days	4th quarter
Unit 6:	Measurement and Data Analysis (Lessons from Unit 4 in Ready Math)	9 days	4th quarter

Appendices

Appendix A: Proficiency Scale Template

Appendix B: Curriculum Refinement Form

Appendix C: K-12 Math Priority Standards Vertical Articulation

Grade 4 Priority Standards

Priority Standards	**4.AT.1**	Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).
	4.AT.4	Solve real-world problems with whole numbers 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. [In grade 4, division problems should not include a remainder.]
	4.AT.5	Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).
	4.C.2	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. Describe the strategy and explain the reasoning.
	4.C.3	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. Describe the strategy and explain the reasoning.
	4.C.6	Add and subtract mixed numbers with common 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).
	4.G.4	Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.
	4.M.1	Measure length to the nearest quarter-inch, eighth-inch, and millimeter.
	4.M.4	Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems.
	4.NS.3	Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers as improper fractions using objects or pictures.
	4.NS.5	Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, 1/2, and 1). Recognize 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.NS.6	Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., 1/2 = 0.5 = 0.50, 7/4 = 1 3/4 = 1.75).

Standards Breakdown

★: Priority Standards ●: Supporting Standards —: Additional Standards —: Fluency Standard

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

General Description of the Unit

In this unit students will read, write, round, and represent whole numbers to 1,000,000. Students will add and subtract multi-digit numbers fluently using the standard algorithmic approach. They will use their number sense and computation skills to solve real-world problems involving addition and subtraction using drawings and equations. In third grade, students developed place-value understanding to 10,000 and added and subtracted within 1,000.

Priority Standards

- **4.AT.1:** Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

Supporting Standards

- **4.C.1:** Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach.
- **4.NS.1:** Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.
- **4.NS.9:** Use place value understanding to round multi-digit whole numbers to any given place value.

Additional Standards

- **4.NS.2:** Compare two whole numbers up to 1,000,000 using >, =, and < symbols.

Enduring Understandings

- Adding and subtracting are essential skills that are necessary to be successful in 21st century workforces.
- The digits in a number represent different place-values.
- Numbers can be represented in multiple ways, including with models, standard form, expanded form, and word form.
- Numbers can be rounded to help us estimate and determine reasonableness of computations.
- There is a time for estimation and a time for precision in math.

Essential Questions

- What is a real-world example of when you might need to add a five-digit number and a four-digit number?
- What is a real-world example of when you might need to subtract a five-digit number from a five-digit number?
- How are addition and subtraction related to one another?
- What is a real-world example of 824,567? What is an example that makes this number seem small? What is an example that makes this number seem big? What would it be impossible to represent with 824,567? What would it be reasonable to represent with 824,567?
- How can rounding be a useful skill?

Key Concepts

- I can use drawings to solve real-world problems that involve adding or subtracting multi-digit whole numbers. (4.AT.1)
- I can use equations that include a variable to solve real-world addition and subtraction problems of multi-digit whole numbers. (4.AT.1)

Related Concepts

- I can fluently add multi-digit whole numbers using a standard algorithm. (4.C.1)
- I can fluently subtract multi-digit whole numbers using a standard algorithm. (4.C.1)
- I can read and write numbers written in both standard and word form up to 1,000,000. (4.NS.1)
- I can represent whole numbers to 1,000,000 in standard, word, and expanded form, and by using models. (4.NS.1)
- I can show numbers as equivalent in standard, word, and expanded form. (4.NS.1)
- I can round whole numbers to any given place value. (4.NS.9)
- I can compare numbers up to 1,000,000 using greater than, less

Vocabulary

- Algorithm
- Compare
- Equal
- Equation
- Equivalent
- Expanded form
- Greater than
- Less than
- Place value
- Round
- Standard form
- Variable
- Whole number
- Word form

	than, and equal to symbols. (4.NS.2)	

Mathematical Processes

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

Resources

Proficiency Scales	Digital	Manipulatives
• 4.AT.1 • 4.NS.1	• IDOE Examples/Tasks 4.AT.1 • IDOE Examples/Tasks 4.C.1 • IDOE Examples/Tasks 4.NS.1 • IDOE Examples/Tasks 4.NS.9 • IDOE Examples/Tasks 4.NS.2	• Base Ten Blocks • Dice and Spinner • Place-Value Discs • Place-Value Mat

School Resources

Textbook	Formative Assessments
Textbook Name: Ready Math, Second Edition: *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 0: Lessons for the First Five Days (3 days) Lesson 1: Read, Write, and Compare Multi-Digit Numbers (4 days) Lesson 2: Add and Subtract Whole Numbers (4 days) Lesson 3: Round Whole Numbers (2 days)	Lesson 1 Quiz Lesson 2 Quiz Lesson 3 Quiz Unit 1 Assessment

General Description of the Unit

In this unit students will deepen their understanding of multiplication by learning multiplicative comparisons and solving real-world problems involving these comparisons. Students will learn to multiply 4 digits by one-digit and two-digit by two-digit numbers using place-value strategies. Students will learn to describe the strategy they are using and explain the reasoning. In third grade, students learned the concepts of multiplication and to multiply one-digit by one-digit numbers using strategies.

Priority Standards

- **4.AT.4:** Solve real-world problems with whole numbers 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. [In grade 4, division problems should not include a remainder.]
- **4.C.2:** 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. Describe the strategy and explain the reasoning.

Supporting Standards

- **4.AT.3:** Interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 × 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.
- **4.C.7:** Show how the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can be multiplied in any order. Understand and use the distributive property.

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- When multiplying large numbers, partial products are found and utilized, and developing number sense with these partial products is important.
- Estimation should be used to determine the reasonableness of a product.
- Multiplication fact fluency means that you are efficient, accurate, and flexible in finding products for two factors.
- Having strategies and quick recall of factors, multiples, and multiplication facts will create efficiency in solving multiplication problems.
- The order which numbers are multiplied in, or the order in which they are grouped will not affect the product.

Essential Questions

- What is multiplication? Describe all you know about multiplication and how it is used in the real world.
- What is a reasonable real-world problem that could be represented by 52 x 63?
- Solve the problem 31 x 25 in two different ways. Which method do you prefer; why? How are your two methods related to one another?
- Consider the problem 52 x 63. What is a reasonable product? Why? What is an unreasonably low product? Why? What is an unreasonably high product? Why?

Key Concepts

- I can use drawings or symbols to help me solve real-world problems that involve multiplicative comparison. (4.AT.4)
- I can tell the difference between multiplicative comparison and additive comparison. (4.AT.4)
- I can multiply two, two digit whole numbers using appropriate strategies. (4.C.2)
- I can multiply a four digit number by a one digit number using appropriate strategies. (4.C.2)
- I can describe and explain my method of solving multiplication problems. (4.C.2)

Related Concepts

- I can interpret a multiplication equation as a comparison (See example in standard). (4.AT.3)
- I can represent verbal statements of multiplicative comparisons as multiplication equations. (4.AT.3)
- I can select appropriate strategies to multiply numbers within 100. (4.C.4)
- I can show that multiplying numbers in any order will produce the same product. (4.C.7)
- I can show that grouping numbers in any order and then multiplying them will produce the same product. (4.C.7)
- I can use and explain the distributive property. (4.C.7)

Vocabulary

- Additive Comparison
- Associative Property of Multiplication
- Commutative Property of Multiplication
- Distributive Property
- Equation
- Factor
- Multiple
- Multiplicative Comparison
- Place value
- Product
- Variable
- Whole number

Mathematical Processes

- PS.1 Make sense of problems and persevere in solving them.
- PS.4 Model with mathematics.

Resources

Proficiency Scales

- 4.AT.4
- 4.C.2- template

Digital

- IDOE Examples/Tasks 4.AT.4
- IDOE Examples/Tasks 4.C.2
- IDOE Examples/Tasks 4.AT.3
- IDOE Examples/Tasks 4.C.4
- IDOE Examples/Tasks 4.C.7

Manipulatives

- Arrays
- Bar Model Tool
- Color Counters
- Multiple Representation Math Fact Cards
- Multiplication Chart
- Number Line
- Partial Product Finder
- Tic Tac Toe Products

School Resources

Textbook

Notes:

Supplement 4.C.2- Multiplication

*In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment.

Lessons:

Lesson 4: Understand Multiplication as Comparison (3 days)
Lesson 5: Work with Multiplication Properties (5 days)
Lesson 6: Solve Multiplicative Comparison Problems (5 days)
Lesson 7: Multiply Whole Numbers (7 days)

Formative Assessments

Lesson 4-6 Quiz

Lesson 7 Quiz

1 Day Review

Unit 2A Assessment

General Description of the Unit

In this unit students will learn multiples and factors to increase fluency when multiplying and dividing. Students will learn to divide with up to four-digit dividends and one-digit divisors including whole number quotients and remainders. Students will apply the relationships between operations to solve real-world problems.

Priority Standards

- **4.C.3:** 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. Describe the strategy and explain the reasoning.
- **4.AT.4:** Solve real-world problems with whole numbers 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. [In grade 4, division problems should not include a remainder.]

Supporting Standards

- **4.AT.2:** Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems.
- **4.NS.8:** 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.

Additional Standards

- **4.AT.6:** Describe a relationship between two variables and use to find a second number when a first number is given. Generate a number pattern that follows a given rule.

Fluency Standards

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- There are multiple strategies for dividing whole numbers.
- Estimation should be used to determine the reasonableness of a quotient.
- Not all dividends can be evenly divided by their divisor, and this will result in a remainder.
- Multiplication has a relationship with repeated addition and an inverse relationship with division. Division has a relationship with repeated subtraction and an inverse relationship with multiplication.
- The relationships/patterns between numbers can be represented with equations and variables.
- Values can be substituted into equations and variables to find unknowns.

Essential Questions

- What is your favorite strategy for dividing numbers? Why?
- Why do some division problems have remainders? Can you think of a word problem that results in a remainder?
- What is a realistic example of when you may need to divide a four-digit number by a one-digit number?
- How are the four operations related? Describe as many connections as you can.
- Why is it helpful to find factor pairs? How do you know when you've found all of the factor pairs for a number?
- What is a variable and how can they be used to describe number patterns?

Key Concepts

- I can solve division problems with up to four-digit dividends and one-digit divisors that have whole number quotients and remainders. (4.C.3)
- I can use strategies based on place value and properties of operations to solve division problems. (4.C.3)
- I can use the relationship between multiplication and division to solve division problems. (4.C.3)
- I can explain my strategy and method of solving division problems. (4.C.3)

Related Concepts

- I can use what I know about the relationship between subtraction and division to solve real-world problems. (4.AT.2)
- I can use what I know about the relationship between multiplication and division to solve real-world problems. (4.AT.2)
- I can find all factor pairs for whole numbers from 1-100. (4.NS.8)
- I can explain the relationship between factors and multiples. (4.NS.8)
- I can decide whether or not one number from 1-100 is a multiple of another one-digit number. (4.NS.8)

Vocabulary

- Additive Comparison
- Dividend
- Divisor
- Equation
- Factor
- Factor pair
- Multiple
- Multiplicative Comparison
- Number pattern
- Product
- Quotient
- Remainder
- Variable
- Whole number

	• I can create a number pattern that follows a given rule. (4.AT.6) • I can show that an equation with two variables is a rule that describes the relationship between the variables. (4.AT.6) • When given one variable in a two-variable equation, I can solve the equation for the second variable. (4.AT.6)	

Mathematical Processes

- PS.2 Reason abstractly and quantitatively.
- PS.8 Look for and express regularity in repeated reasoning.

Resources

Proficiency Scales	Digital	Manipulatives
• 4.AT.4 • 4.C.3	• IDOE Examples/Tasks 4.AT.4 • IDOE Examples/Tasks 4.C.3 • IDOE Examples/Tasks 4.C.4 • IDOE Examples/Tasks 4.NS.8 • IDOE Examples/Tasks 4.AT.6	• Arrays • Bar Model Tool • Color Counters • Multiple Representation Math Fact Cards • Multiplication Chart • Number Line • Partial Product Finder • Tic Tac Toe Products

School Resources

Textbook	Formative Assessments

Notes: Supplement 4.C.3- Division *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 8: Multiples and Factors (4 days) Lesson 9: Divide Whole Numbers (10 days) Lesson 10: Use Rules to Describe Number Patterns (3 days) Lesson 11: Use Relationships to Solve Problems (3 days)	Lesson 8 Quiz Lesson 9 Quiz 1 Day Review Unit 2B Assessment

Unit 3A: Fractions - Number Sense (19 days, 2nd quarter)

General Description of the Unit

In this unit students will expand their understanding of fractions by learning to name and write mixed numbers and improper fractions. Students will compare fractions with different numerators and different denominators using comparison symbols and understand that comparisons are only valid when the two fractions are referring to the same whole. In third grade, students learned to represent equivalent fractions with limited denominators and compared fractions with same numerators or denominators.

Priority Standards

- **4.NS.3:** Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers as improper fractions using objects or pictures.
- **4.NS.5:** Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, 1/2, and 1). Recognize 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).

Supporting Standards

- **4.NS.4:** Explain why a fraction, a/b, is equivalent to a fraction, (n × a)/(n × 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. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.]

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- Improper fractions and mixed numbers are related, and representations can be converted between to simplify computations.
- All fractions can be compared using multiple strategies based in number sense such as using benchmark fractions, comparing like numerators, comparing like denominators, or finding equivalent fractions.
- Equivalent fractions represent the same fractional amount with different numbers and can be useful in fraction comparisons and computations.

Essential Questions

- How are mixed numbers and improper fractions the same? How are they different? When would you see each in the real world?
- What are common mistakes to avoid when comparing fractions?
- When might you need to compare fractions?
- What is the purpose of finding equivalent fractions? What is a real-world example of how an equivalent fraction would be helpful in some way?

Key Concepts

- I can express whole numbers as fractions. (4.NS.3)
- I can use objects and pictures to name and write mixed numbers. (4.NS.3)
- I can recognize fractions equivalent to whole numbers. (4.NS.3)
- I can use objects and pictures to name and write mixed numbers as improper fractions. (4.NS.3)
- I can explain that comparing 2 fractions must refer to the same whole. (4.NS.5)
- I can compare 2 fractions by reasoning about their size. *I can compare 2 fractions by creating equivalent fractions with a common denominator. (4.NS.5)
- I can order fractions using <, >, and = and justify the comparison. (4.NS.5)

Related Concepts

- I can use visual fraction models to explain why one fraction is equivalent to another. (4.NS.4)
- I can show that even though the number and size of the parts of two fractions may differ, the fractions themselves are the same size. (4.NS.4)
- I can generate and recognize equivalent fractions. (4.NS.4)

Vocabulary

- Benchmark
- Common denominator
- Denominator
- Equal
- Equivalent fractions
- Fractions
- Greater than
- Improper fraction
- Less than
- Mixed number
- Numerator
- Unlike fractions
- Whole number

Mathematical Processes

- PS.4 Model with mathematics.

• PS.7 Look for and make use of structure.

Resources		
Proficiency Scales • 4.NS.3 • 4.NS.5 - template	**Digital** • IDOE Examples/Tasks 4.NS.3 • IDOE Examples/Tasks 4.NS.5 • IDOE Examples/Tasks 4.NS.4	**Manipulatives** • Fraction Bars • Fraction Circles • Fraction Decimal Grid • Fraction Strips • Fraction Wall • Online Improper Fraction and Mixed Number Builder

School Resources	
Textbook Notes: Supplement 4.NS.4- Fraction Number Sense *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 12: Whole Numbers, Mixed Numbers, and Improper Fractions (5 days) Lesson 13: Understand Equivalent Fractions (5 days) Lesson 14: Compare Fractions (5 days)	**Formative Assessments** Lesson 12 Quiz Lesson 13 Quiz Lesson 14 Quiz Unit 3A Assessment

General Description of the Unit

In this unit students will be introduced to fraction computations. Students will add and subtract fractions with common denominators, including mixed numbers. Students will solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators.

Priority Standards

- **4.AT.5:** Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).
- **4.C.6:** Add and subtract mixed numbers with common 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).

Supporting Standards

- **4.C.5:** Add and subtract fractions with common denominators. Decompose a fraction into a sum of fractions with common denominators. Understand addition and subtraction of fractions as combining and separating parts referring to the same whole.

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- There are many real-world situations which involve adding and subtracting fractions.
- When adding and subtracting mixed numbers you may need to convert between mixed numbers and improper fractions.
- When adding mixed numbers, the wholes and fractions can be added separately. You cannot always subtract the wholes and the fractions separately.
- Addition and subtraction of fractions involve combining and separating parts referring to the same whole.
- Visual models, and number lines can be used to represent addition and subtraction with fractions.
- Common denominators are needed in fraction addition and subtraction.

Essential Questions

- What is a real-world situation in which you may need to add fractions? Mixed numbers?
- What is a real-world situation in which you may need to subtract fractions? Mixed numbers?
- When might you need to convert between improper fractions and mixed numbers when adding and subtracting mixed numbers?
- How are adding and subtracting fractions similar to adding and subtracting whole numbers? How are they different?
- What is important when adding and subtracting fractions?

Key Concepts

- I can use fraction models and equations to add fractions with common denominators in real-world problems. (4.AT.5)
- I can use fraction models and equations to help me subtract fractions with common denominators in real-world problems. (4.AT.5)
- I can add and subtract mixed numbers with common denominators. (4.C.6)
- I can use properties of operations to add and subtract mixed numbers with common denominators. (4.C.6)
- I can add and subtract mixed numbers with common denominators by replacing the mixed numbers with equivalent fractions. (4.C.6)
- I use the relationship between addition and subtraction to add and subtract mixed numbers with common denominators. (4.C.6)

Related Concepts

- I can add fractions that have common denominators. (4.C.5)
- I can subtract fractions that have common denominators. (4.C.5)
- I can decompose a fraction into a sum of fractions having common denominators. (4.C.5)
- I can show that when I add or subtract fractions, I am actually combining or taking apart pieces of a whole. (4.C.5)

Vocabulary

- Common denominator
- Decompose
- Denominator
- Equivalent fraction
- Numerator

Mathematical Processes

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

Resources

Proficiency Scales	Digital	Manipulatives
• 4.AT.5 • 4.C.6- template	• IDOE Examples/Tasks 4.AT.5 • IDOE Examples/Tasks 4.C.6 • IDOE Examples/Tasks 4.C.5	• Fraction Bars • Fraction Circles • Fraction Decimal Grid • Fraction Strips • Fraction Wall • Online Improper Fraction and Mixed Number Builder

School Resources

Textbook	Formative Assessments
*In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 15: Understand Fraction Addition and Subtraction (3 days) Lesson 16: Add and Subtract Fractions with Common Denominators (5 days) Lesson 17: Add and Subtract Mixed Numbers (5 days)	Lessons 15-16 Quiz Lesson 17 Quiz Unit 3B Assessment

General Description of the Unit

In this unit students will be formally introduced to decimal place-value. Students will learn to write, represent, and compare decimals to the hundredths place. Students will understand decimal and fraction equivalents for halves and fourths. Students will use visual models to justify decimal comparisons.

Priority Standards

- **4.NS.6:** Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., 1/2 = 0.5 = 0.50, 7/4 = 1 3/4 = 1.75).

Supporting Standards

- **4.NS.7:** Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model).

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- In the base-ten number system, the first two decimal place-values represent tenths and hundredths of a whole.
- Decimals and fractions are related and conversions between the two representations can simplify computations and comparisons.
- Decimals can be compared using similar strategies as whole numbers.

Essential Questions

- How are pennies and dimes related to tenths and hundredths? How could you use money to explain comparing decimals to someone?
- Why is it useful to be able to convert between fractions and decimals? Which do you prefer using; why? What is a real-world example of when it would be easier to use fractions and when it would be easier to use decimals?
- How are quarters related to decimals and fractions? Why is it useful to know these comparisons?

Key Concepts

- I can write tenths and hundredths as fractions and decimals. (4.NS.6)
- I can show decimals to the hundredths place in word form, expanded form, and standard form. (4.NS.6)
- I can use models to represent decimals to the hundredths. (4.NS.6)
- I can recall fraction and decimal equivalents for halves and fourths. (4.NS.6)
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Related Concepts

- I can compare two decimals to the hundredths place by reasoning about their size based on same whole. (4.NS.7)
- I can compare two decimals using <, >, and =, and can justify my comparison. (4.NS.7)

Vocabulary

- Compare
- Equal
- Equivalent
- Greater than
- Less than
- Standard form
- Word form

Mathematical Processes

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

Resources

Proficiency Scales

- 4.NS.6

Digital

- IDOE Examples/Tasks 4.NS.6
- IDOE Examples/Tasks 4.NS.7

Manipulatives

- Decimal Strips
- Fraction Decimal Grid

School Resources	
Textbook *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 18: Relate Decimals and Fractions (5 days) Lesson 19: Compare Decimals (4 days)	**Formative Assessments** 1 Day Review Unit 3C Assessment

General Description of the Unit

In this unit students will explore measurements such as volume, distance, time, money, and mass and will solve real-world problems using all four operations involving these measurements. Students will measure length to the nearest quarter-inch, eighth-inch, and millimeter. Then they will make a line plot to display a data set of measurements and solve problems involving addition and subtraction of fractions in relation to that data set. In third grade, students learned to measure length to the nearest quarter-inch and used tools to measure weight and temperature.

Priority Standards

- **4.M.1:** Measure length to the nearest quarter-inch, eighth-inch, and millimeter.

Supporting Standards

- **4.DA.2:** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using data displayed in line plots.
- **4.M.2:** Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two-column table.
- **4.M.3:** Use the four operations to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- Being able to measure precisely and accurately is important.
- Graphically representing data makes analyzing data easier.
- There are different measurement systems used around the world. The United States uses the Customary system as opposed to the Metric System that is used by many other countries.
- Measurements between two systems can be relatively compared.
- Measurements can be converted into larger and smaller units.

Essential Questions

- In what real-life situations is it necessary to be able to measure precisely? How many real-life situations can you think of in which estimation is useful?
- What tool would you use to measure a pencil? What tool would you use to measure your height? What tool would you use to measure the length of a shelf? Could you use the same tool for all three? Why would you choose to use one tool over another?
- How can line plots and other tools be used to solve measurement problems?

Key Concepts

- I can measure length to the nearest quarter and eighth of an inch. (4.M.1)
- I can measure length to the nearest millimeter. (4.M.1)

Related Concepts

- I can make a line plot that displays a data set in fractions of a unit. (4.DA.2)
- I can use line plots to solve problems that involve adding and subtracting fractions. (4.DA.2)
- I can identify relative sizes of measurements within one system of units. (4.M.2)
- I can identify the relative size of measure of km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. (4.M.2)

Vocabulary

- Intervals
- Line plot
- Mass
- Metric System
- System of measurement
- Table
- Volume

	• I can express measurements in a larger unit in terms of a smaller unit within the same system of measurement. (4.M.2) • I can use the four operations to solve real-world problems that involve distances. (4.M.3) • I can use the four operations to solve real-world problems that involve time intervals. (4.M.3) • I can use the four operations to solve real world problems that involve volume. (4.M.3) • I can use the four operations to solve real-world problems that involve money. (4.M.3) • I can solve real-world problems that involve adding and subtracting simple fractions. (4.M.3) • I can solve real-world problems that require converting from one unit of measure to another. (4.M.3)	

Mathematical Processes

- PS.4 Model with mathematics.
- PS.5 Use tools appropriately.

Resources

Proficiency Scales	Digital	Manipulatives
• 4.M.1 • 4.M.2	• IDOE Examples/Tasks 4.M.1 • IDOE Examples/Tasks 4.DA.2 • IDOE Examples/Tasks 4.M.2 • IDOE Examples/Tasks 4.M.3	• Conversion Calculator • Ruler Games

School Resources

Textbook	Formative Assessments
Notes: Supplement 4.M.3- Using 4 operations to solve real-world problems involving measurement. *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 20: Time and Money (6 days) Lesson 21: Length, Liquid Volume, and Mass (5 days) Lesson 23: Measure Length and Plot Data on Line Plots (5 days)	Lesson 20 Quiz Lesson 21 Quiz Lesson 23 Quiz

Unit 4B: Measurement and Data Analysis- Area and Perimeter (6 days, 4th quarter)

General Description of the Unit

In this unit students will apply the area and perimeter formulas to complex shapes by decomposing them into smaller shapes. Students will use this technique to solve real-world problems involving area and perimeter of complex shapes. In third grade, students learned to find area of rectangles and perimeter of polygons with known and unknown side lengths.

Priority Standards

- **4.M.4:** Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems.

Supporting Standards

N/A

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- Perimeter represents the outside measurement of a shape.
- Area represents the inside measurement of square units within a shape's perimeter.
- Shapes can be decomposed into smaller shapes to calculate area and perimeter.

Essential Questions

- How can you describe the size and shape of your bedroom to someone who has never seen it? Our classroom? The school?
- How are perimeter and area related to one another? How are they different? Give as many real-world examples of perimeter and area as you can think of.
- Do you think it is more useful to be able to find the perimeter or area of a space? Why?

Key Concepts

- I can solve real-world problems by applying the area and perimeter formulas for rectangles. (4.M.4)
- I can explain that the area of a rectangle is additive. (4.M.4)
- I can find the area of complex shapes by decomposing them into smaller rectangles, finding their area, and then adding them back together to solve real- real world problems. (4.M.4)

Related Concepts

N/A

Vocabulary

- Area
- Complex shape
- Perimeter

Mathematical Processes

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

Resources

Proficiency Scales

- 4.M.4

Digital

- IDOE Examples/Tasks 4.M.4

Manipulatives

- Area and Perimeter Builder Challenge
- Area/Perimeter Explorer

School Resources	
Textbook *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 22: Perimeter and Area (5 days)	**Formative Assessments** Unit 4 Assessment

General Description of the Unit

In this unit students will explore geometric shapes, rays, angles, and lines. Students will learn to identify, describe, and draw rays, angles, and perpendicular and parallel lines using appropriate tools. Students will classify two-dimensional figures based on their lines and angles. Students will recognize and draw lines of symmetry. In third grade, students learned to identify points, lines, and line segments and that shapes share attributes and can be a part of a larger group called quadrilaterals.

Priority Standards

- **4.G.4:** Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.

Supporting Standards

- **4.G.1:** Identify, describe, and draw parallelograms, rhombuses, and trapezoids using appropriate tools (e.g., ruler, straightedge and technology).
- **4.G.5:** Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse).
- **4.M.6:** Measure angles in whole-number degrees using appropriate tools. Sketch angles of specified measure.

Additional Standards

- **4.G.2:** Recognize and draw lines of symmetry in two-dimensional figures. Identify figures that have lines of symmetry.
- **4.G.3:** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint.
- **4.M.5:** Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. Understand an angle that turns through 1/360 of a circle is called a “one-degree angle,” and can be used to measure other angles. Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees.

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- When two rays are joined with a point they form an angle. Angles can be described as right (90 degrees), acute (less than 90 degrees), obtuse (more than 90 degrees), or straight (180 degrees).
- Perpendicular lines intersect and form a 90-degree angle.
- Parallel lines do not ever intersect.
- Geometric shapes such as triangles, squares, rectangles, parallelograms, and rhombi can be categorized in multiple ways.
- Triangles and quadrilaterals can be classified based on their sides and angles.
- Protractors are used to draw and measure angles. Angle classifications (right, acute, obtuse) can be used to determine approximations of angles without protractors.

Essential Questions

- What are different ways to describe angles? Why is it helpful to be able to describe an angle?
- What are different ways to describe lines? Why is it helpful to be able to distinguish between different types of lines?
- What are the similarities between parallelograms, rhombuses, and trapezoids? What are the differences?
- What are all the different ways you can think of to classify a triangle? A quadrilateral?

Key Concepts	Related Concepts	Vocabulary

• I can use tools and technology to draw rays, angles, perpendicular, and parallel lines. (4.G.4) • I can describe and identify rays, right, acute, and obtuse angles, and perpendicular and parallel lines. (4.G.4) • I can find rays, angles, perpendicular, and parallel lines in two-dimensional shapes. (4.G.4)	• I can use tools and technology to draw parallelograms, rhombi, and trapezoids. (4.G.1) • I can describe and identify parallelograms, rhombi, and trapezoids. (4.G.1) • I can classify triangles as right, acute, or obtuse. (4.G.5) • I can classify quadrilaterals based on the presence or absence of parallel and perpendicular lines and by the presence or absence of right, acute, or obtuse angles. (4.G.5) • I can use protractors to help me accurately measure angles. (4.M.6) • I can draw angles with specific measures. (4.M.6) • I can draw lines of symmetry on a two-dimensional figures. (4.G.2) • I can show that angles are shapes which are made when two rays have the same endpoint. (4.G.3) • I can explain how angles are measured in reference to a circle, with the endpoint of the rays being at the center of the circle. (4.M.5) • I can explain the connection between degrees and angle measures. (4.M.5)	• Acute angle • Acute triangle • Angle • Degree • Endpoint • Equilateral triangle • Isosceles triangle • Lines of symmetry • Obtuse angle • Obtuse triangle • Parallel lines • Parallelogram • Perpendicular lines • Protractor • Quadrilateral • Ray • Rhombus • Right angle • Right triangle • Ruler • Scalene triangle • Straightedge • Symmetry • Trapezoid • Triangle • Two-dimensional • Vertex

Mathematical Processes

- PS.4 Model with mathematics.
- PS.5 Use tools appropriately.

Resources

Proficiency Scales	Digital	Manipulatives
• 4.G.4	• IDOE Examples/Tasks 4.G.4 • IDOE Examples/Tasks 4.G.1 • IDOE Examples/Tasks 4.G.5 • IDOE Examples/Tasks 4.M.6 • IDOE Examples/Tasks 4.G.2 • IDOE Examples/Tasks 4.G.3 • IDOE Examples/Tasks 4.M.5	• Angles • Geogebra Geometry • Protractor

School Resources

Textbook	Formative Assessments
Note: Lessons 24 and 25 are moved to the end of the curriculum map to prioritize geometry concepts in sequence and pacing. *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 26: Lines, Rays, and Angles (5 days) Lesson 27: Understand Angles (3 days) Lesson 28: Measure and Draw Angles (4 days) Lesson 29: Classify and Draw Two-Dimensional Figures (5 days) Lesson 30: Symmetry (1 day)	Lesson 26-27 Quiz Lesson 28 Quiz Unit 5 Assessment

Unit 6: Measurement and Data Analysis (Lessons from Unit 4 in Ready Math) (9 days, 4th quarter)

General Description of the Unit

In this unit students will learn to interpret data displayed in a circle graph. Students will formulate questions that can be addressed with data. Students will collect, represent, and interpret data using tables, line plots, and bar graphs, In third grade, students created scaled picture and bar graphs and frequency tables to display data and solved one and two step problems involving data.

Priority Standards

N/A

Supporting Standards

- **4.DA.1:** Formulate questions that can be addressed with data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs.
- **4.DA.3:** Interpret data displayed in a circle graph.

Fluency Standard

- **4.C.4:** Multiply fluently within 100.

Enduring Understandings

- 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 important for meaningful data collection.

Essential Questions

- To fully interpret a bar graph, circle graph, or a line plot, what key information is necessary?
- In what real-world scenario would you choose to represent data using a circle graph? A line plot? A bar graph? A frequency table?

Key Concepts

N/A

Related Concepts

- I can create questions that can be answered using data. (4.DA.1)
- I can collect data using surveys, experiments and observations. (4.DA.1)
- I can use line plots, data tables and bar graphs to represent and interpret data I have collected. (4.DA.1)
- I can interpret the data that is displayed on a circle graph. (4.DA.3)

Vocabulary

- Bar graph
- Circle graph
- Frequency table
- Line plot
- Survey

Mathematical Processes

- PS.2 Reason abstractly and quantitatively.
- PS.3 Construct convincing arguments and critique the reasoning of others.

Resources

Proficiency Scales

- 4.DA.1

Digital

- IDOE Examples/Tasks 4.DA.1
- IDOE Examples/Tasks 4.DA.3

Manipulatives

- Graph Creator

School Resources	
Textbook *In general, pacing is estimated with the recommended Ready Math pacing, with an additional day per quiz and one day for the unit assessment. Lessons: Lesson 24: Interpret Circle Graphs (3 days) Lesson 25: Collecting and Representing Data (5 days)	**Formative Assessments** Lesson 24-25 Quiz