Marietta City Schools
District Unit Planner

Fourth Grade

Unit Name	***Unit 4:*** *Investigating Fractions and Decimal*	**Unit duration (Days)**	*7-8 weeks*

GA K-12 Standards

Previously students have partitioned shapes into halves, thirds, quarters (fourths), determined equivalences for simple fractions, and identifying and comparing fractional parts. In this unit, students will be building on this understanding to compare fractions less than 1, add and subtract fractions with like denominators, and measure to the nearest 1/8 of an inch.

4.NR.4: Solve real-life problems involving addition, subtraction, equivalence, and comparison of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100 using part-whole strategies and visual models.
- **4.NR.4.1** Using concrete materials, drawings, and number lines, demonstrate and explain the relationship between equivalent fractions, including fractions greater than one, and explain the identity property of multiplication as it relates to equivalent fractions. Generate equivalent fractions using these relationships.
- **4.NR.4.2** Compare two fractions with the same numerator or the same denominator by reasoning about their size and recognize that comparisons are valid only when the two fractions refer to the same whole.
- **4.NR.4.3** Compare two fractions with different numerators and/or different denominators by flexibly using a variety of tools and strategies and recognize that comparisons are valid only when the two fractions refer to the same whole.
- **4.NR.4.4** Represent whole numbers and fractions as the sum of unit fractions.
- **4.NR.4.5** Represent a fraction as a sum of fractions with the same denominator in more than one way, recording with an equation.
- **4.NR.4.6** Add and subtract fractions and mixed numbers with like denominators using a variety of tools.

4.NR.5 Solve real-life problems involving addition, equivalence, comparison of fractions with denominators of 10 and 100, and comparison of decimal numbers as tenths and hundredths using part-whole strategies and visual models.
- **4.NR.5.1** Demonstrate and explain the concept of equivalent fractions with denominators of 10 and 100, using concrete materials and visual models. Add two fractions with denominators of 10 and 100.
- **4.NR.5.2** Represent, read, and write fractions with denominators of 10 or 100 using decimal notation, and decimal numbers to the hundredths place as fractions, using concrete materials and drawings.
- **4.NR.5.3** Compare two decimal numbers to the hundredths place by reasoning about their size. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions.

4.MDR.6 Measure time and objects that exist in the world to solve real-life, mathematical problems.

- **4.MDR.6.1** Use the four operations to solve problems involving elapsed time to the nearest minute, intervals of time, metric measurements of liquid volumes, lengths, distances, and masses of objects, including problems involving fractions with like denominators, and also problems that require expressing measurements given in a larger unit in terms of a smaller unit, and expressing a smaller unit in terms of a larger unit.
- **4.MDR.6.2** Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life.
- **4.MDR.6.3** Create dot plots to display a distribution of numerical (quantitative) measurement data.

4.MP.1-8 Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals. *(It is important to note that MPs 1, 3 and 6 should support the learning in every lesson.)*
- **MP.1** Make sense of problems and persevere in solving them.
- **MP.2** Reason abstractly and quantitatively.
- **MP.3** Construct viable arguments and critique the reasoning of others.
- **MP.4** Model with mathematics.
- **MP.5** Use appropriate tools strategically.
- **MP.6** Attend to precision.
- **MP.7** Look for and make use of structure.
- **MP.8** Look for and express regularity in repeated reasoning.

The Framework for Statistical Reasoning and the Mathematical Modeling Framework should be taught throughout the units. The K-12 Mathematical Practices should be evidenced at some point throughout each unit depending on the tasks that are explored. It is important to note that MPs 1, 3 and 6 should support the learning in every lesson.

I Can Statements

- I can describe how the number and size of the parts differ even though the fractions are equivalent.
- I can generate equivalent fractions.
- I can explain fractional equivalence as multiplicative and why they are not additive.
- I can describe how the number and size of the parts differ even though the fractions are equivalent.
- I can use fraction diagrams to compare fractions.
- I can recognize that comparisons are valid only when the two fractions refer to the same whole.
- I can record the results of comparisons with symbols >, =, or <, and justify the conclusions.
- I can join (compose) and break apart (decompose) whole numbers and fractions as the sum of unit fractions.
- I can decompose a fraction into a sum of fractions with the same denominator using visual representations and write an equation to justify my work.
- I can justify my reasoning using visual fraction representations.
- I can compose and decompose mixed numbers in more than one way using visual representations.
- I can flexibly add and subtract fractions and mixed numbers with the same denominator in word problems using different strategies as they relate to everyday life.
- I can represent fractions with denominators of 10 or 100 using decimal notation, and decimal numbers to the hundredths place as fractions, using concrete materials and drawings.
- I can read fractions with denominators of 10 or 100 using decimal notation, and decimal numbers to the hundredths place as fractions.
- I can write fractions with denominators of 10 or 100 using decimal notation, and decimal numbers to the hundredths place as fractions.
- I can reason about the size of decimals when comparing decimals.

- I can order and compare decimal fractions to the hundredths using <, >, and =.
- I can measure lengths of objects using appropriate tools strategically.
- I can represent, read, and write fractions with denominators of 10 or 100 using decimal notation and decimal numbers to the hundredths place as fractions.
- I can compare two decimal numbers using various strategies.

Assessments

Formative Assessment(s):
- MCS K-5 Activity & Assessment Collection
- MIP Formative Assessment p. 141 (Equivalent Fractions)
- MIP Formative Assessment p. 147 (Comparing Fractions)
- MIP Formative Assessment p. 149 -150 (Comparing Fractions)
- MIP Formative Assessment p. 162 -163 (Decomposing Fractions)
- MIP Formattive Assessment p. 169 (adding fractions)
- MIP Formative Assessment p. 171-172 (adding fractions with sum greater than 1)
- 4.NR.4.1 MCS Mini Assessment
- 4.NR.4.3 MCS Mini Assessment

It is the responsibility of each schools' grade level PLC to identify appropriate instructional lessons and resources, based on data and student needs, using the suggested pacing duration. The following learning tasks have been vetted to align to the standards included in this unit. The GA Dept. of Education strongly recommends that any additional tasks, resources, and/or assessments used for instruction should be vetted using the Quality Assurance Rubric, to ensure alignment to the state standards.

Objective or Content	Learning Experiences		Differentiation Considerations
4.NR.4: Solve real-life problems involving addition, subtraction, equivalence, and comparison of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100 using part-whole strategies and visual models.	**GA DOE Learning Plans** **Equivalent Fractions: Fractions of a Whole** **4.NR.4.1** *In this learning plan, students will be exploring equivalent fractions, including those that are greater than one using concrete materials and drawings. (Suggested Time Frame: 3-4 Days)* ● Teacher Guidance ● Student Reproducibles **Eggcellent Fractional Thinking** **4.NR.4.1**	**MCS Curriculum Resources** **SAVVAS enVision Topic 8: Extend Understanding of Fraction Equivalence and Ordering** *Students will recognize and generate equivalent fractions and compare fractions with different numerators and different denominators.* ● Lesson 8-1: Equivalent Fractions: Area Models ● Lesson 8-2: Equivalent Fractions: Number Lines ● Lesson 8-3: Generate Equivalent Fractions: Multiplication ● Lesson 8-4: Generate Equivalent Fractions: Division ● Lesson 8-5: Use Benchmarks to Compare Fractions	**GADOE Intervention Tasks** Cuisenaire Rod Fractions: Understanding fractions of regions and Adding and subtracting fractions Fractional Blocks: Understanding fractions of regions and Adding and subtracting fractions Pattern Block Fractions: Understanding fractions of

Last Revised: May 2023

In this learning plan, students will be looking at discrete fractions or fractions of a set and identifying equivalent fractions as well as determining the quantity (how many) are in each fractional part. (Suggested Time Frame: 2-3 Days) ● Teacher Guidance ● Student Reproducibles **Fraction Equivalence** **4.NR.4.1, 4.NR.4.2, 4.NR.4.3** *In this learning plan, students will be exploring equivalent fractions on a number line, including those greater than one. (Suggested Time Frame: 1-2 Days)* ● Teacher Guidance ● Student Reproducibles **Comparing Fractions** **4.NR.4.2** *In this learning plan, students will be exploring comparing fractions with the same numerator or the same denominator. Students should be able to recognize that comparisons are valid only when the two fractions refer to the same whole. Students should record the results of comparisons with symbols >, =, or <, and justify the conclusions. (Suggested Time Frame: 2-3 Days)* ● Teacher Guidance ● Student Reproducibles **Comparing Fractions, Part 2** **4.NR.4.2, 4.NR.4.3** *In this learning plan, students will be exploring comparing fractions with the different numerators and/ or different denominators, as well as comparing to benchmarks such as 0, 1 2 , and 1. Students should be able to recognize that comparisons are valid only when the two fractions refer to the same whole. Students should record the results of comparisons with symbols >, =, or <, and justify the conclusions. (Suggested Time Frame: 2-3 Days)* ● Teacher Guidance ● Student Reproducibles	● Lesson 8-6: Compare Fractions **MIP Module 7 Exploring Equivalence And Ordering Fractions** *Students explore equivalence of fractions using paper folding and concrete materials and learn how to generate equivalent fractions.* ● Exploring Equivalence with Pattern Blocks p. 136-137 ● Folding Paper to Find Equivalence p. 137-139 ● Exploring Equivalence with 2-Color Counters p. 139-141 ● Talk About It/ Write About It p. 141-142 ● Vocabulary Sort p. 142 ● Estimating Fractions to Build Fraction Sense p. 142-143 ● Moving from Models to Reasoning to Compare Fractions p. 143-145 ● A Focus on Accurate Models p. 145-147 ● Finding a Common Denominator p. 148-149 ● Ordering Fractions p. 150- 151 ● Which is Greater? p. 152 ● Agree/Disagree p. 152 ● Name Those Fractions p. 152 ● Fraction Action p. 153 ● Talk About It/ Write About It p. 153 ● Draw My Fraction Challenges p.153 ● Fraction Compare p. 154 ● Line It Up p. 154 ● Estimate It p. 155 **SAVVAS enVision Topic 9 : Understand Addition and Subtraction of Fractions** *Students will understand adding and subtracting fractions and mixed numbers with like denominators.* ● Lesson 9-1: Model Addition of Fractions ● Lesson 9-2: Decompose Fractions ● Lesson 9-3: Add Fractions with Like Denominators ● Lesson 9-4: Model Subtraction of Fractions ● Lesson 9-5: Subtract Fractions with Like Denominators ● Lesson 9-6: Add and Subtract Fractions with Like	regions and Adding and subtracting fractions Adding and Subtracting Fractions: Understanding fractions of regions and Adding and subtracting fractions Comparing Apples with Apples: Understanding fractions of regions and Adding and subtracting fractions Packets of Lollipops: Understanding fractions of regions and Adding and subtracting fractions Confusing Fractions and Decimals: Identifying, order and compare decimals Linking Money and Decimal Fractions: Identifying, order and compare decimals Packets of Lollipops: Identifying, order and compare decimals Rocket - Where Will I Land: Identifying, order and compare decimals Confusing Fractions and Decimals: Locating fractions on the number line

Exploring Unit Fractions
4.NR.4.4, 4.NR.4.5
In this plan, students will decompose whole numbers and fractions as a sum of unit fractions and justify their reasoning using visual fraction representations. They will also decompose a fraction as a sum of fractions in multiple ways recording each decomposition by an equation. (Suggested Time Frame: 1-2 Days)
- Teacher Guidance
- Student Reproducibles

Exploring Mixed Numbers and Fractions Greater than 1
4.NR.4.6
In this learning plan, students will add and subtract fractions and mixed numbers with the same (like) denominators by joining and separating parts referring to the same whole while solving genuine, mathematical problems related to everyday life. (Suggested Time Frame: 1-2 Days)
- Teacher Guidance
- Student Reproducibles

Denominators
- Lesson 9-7: Model Addition and Subtraction of Mixed Numbers
- Lesson 9-8: Add Mixed Numbers
- Lesson 9-9: Subtract Mixed Numbers

MIP Module 8: Decomposing Fractions:
Students connect decomposition of whole numbers to fractions.
- Decomposing Fractions p. 160
- Talk About It/Write About It p. 163
- Matching Fractions p. 163-164

MIP Module 8: Adding and Subtracting Fractions:
Students explore addition and subtraction of fractions with like denominators using concrete materials and number lines.
- Exploring Addition of Fractions with Fraction Pieces p. 164-165
- Adding Fractions with Area Models p. 165-166
- Adding Fractions with Number Lines p. 166-168
- Exploring Sums Greater Than 1 p. 169-170
- Exploring Sums Greater Than 1 with Varied Models p. 170-171
- Exploring Addition with Mixed Numbers p. 172-174
- Exploring Subtraction with Fraction Pieces, Number Lines, and Area Models p. 174-176
- Exploring Subtraction with Mixed Numbers p. 176-178
- Talk About It/Write About It p. 179
- Pass A Problem p. 179-180
- Focus On A Question p. 180
- Flying State Flags p. 180-181
- Bucket of Problems p. 181

SAVVAS enVision Topic 11: Represent and Interpret Data on Line Plots
Students will solve problems using data on a line plot.
- Lesson 11-1 Read Line Plots
- Lesson 11-2: Make Line Plots
- Lesson 11-3: Use Line Plots to Solve Problems

| 4.NR.5 Solve real-life problems involving addition, equivalence, comparison of fractions with denominators of 10 and 100, and comparison of decimal numbers as tenths and hundredths using part-whole strategies and visual models. | **Equivalence - Decimal Fractions** **4.NR.5** *In this learning plan, students will focus on the concept of equivalent fractions with denominators of 10 and 100. Students will use concrete materials and visual models. (Suggested Time Frame: 2 - 3 Days)*
 • Teacher Guidance
 • Student Reproducibles

 Adding Decimal Fractions: Tenths and Hundredths **4.NR.5.1** *In this plan, will solve mathematical problems involving the addition of two fractions with denominators of 10 and 100. Students should be given multiple opportunities to use visual models to develop part-whole reasoning when building an understanding of equivalent fractions. (Suggested Time Frame: 1-2 Days)*
 • *Teacher Guidance*
 • *Student Reproducibles*

 Decimal Notation: Tenths and Hundredths **4.NR.5.1, 4.NR.5.2** *In this plan, will solve mathematical problems involving the addition of two fractions with denominators of 10 and 100. Students should be given multiple opportunities to use visual models to develop part-whole reasoning when building an understanding of equivalent fractions. (Suggested Time Frame: 2 - 3 Days)*
 • Teacher Guidance
 • Student Reproducibles

 Comparing Decimals **4.NR4.5** *In this plan, students will explore comparing decimals to the tenths and hundredths places. (Suggested Time Frame: 2 - 3 Days)*
 • Teacher Guidance
 • Student Reproducibles | **SAVVAS enVision Topic 12: Understand and Compare Decimals** *Students will write fractions as decimals, locate points on a number line, and compare decimals.*
 • Lesson 12-1: Fractions and Decimals
 • Lesson 12-2: Fractions and Decimals on a Number Line
 • Lesson 12-3: Compare Decimals
 • Lesson 12-4: Add Fractions with Denominators of 10 and 100 | |

	Decimal Notation and Measurement **4.NR.5.1, 4.NR.5.2, 4.NR.5.3, 4.MDR.6.1** *In this learning plan, students will explore decimal fractions and decimal notation in the context of lengths and heights of objects in the metric measurement system. (Suggested Time Frame: 1 -2 Days)* ● Teacher Guidance ● Student Reproducibles		
4.MDR.6 Measure time and objects that exist in the world to solve real-life, mathematical problems.	**Measure Up** *In this learning plan, students will be collecting and graphing measurement data to the nearest 1 8 of an inch using a dot plot/line plot graph. (Suggested Time Frame: 2-3 Days)* ● Teacher Guidance ● Student Reproducibles	**SAVVAS enVision Topic 8, 9, 11 & 12:** ● Lesson 8-7: Construct Arguments ● Lesson 9-10: Model with Math ● Lesson 11-4: Critique Reasoning ● Lesson 12-6: Look for and Use Structure	

Content Resources

GA DOE Links: ● GA DOE Unit 4: Investigating Fractions and Decimal ● GA DOE Grade Comprehensive Grade Level Overview ● GA DOE Grade Level Guide for Effective Mathematics Instruction ● K-5 Georgia Mathematics Strategies Toolkit ● Mathematics to Support English Language Learners ● Georgia Numeracy Project ● K-12 Mathematical Modeling Framework ● K-12 Statistical Reasoning Framework ● K-12 Mathematical Practices	**Additional Resources:** ● Estimation Activities/Estimation 180 ● Which One Doesn't Belong? ● Same or Different? ● Splat! ● Splash Learn - Equivalent Fraction Games ● Splash Learn - Comparing Fractions ● Khan Academy - Mixed Numbers