Unit 3 - Number and Operations: Fractions

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

Unit Overview

Enduring Understandings

Explain the relationship between the number of parts in equivalent fractions using visual models and use multiplication and division to recognize and generate equivalent fractions.
Compare two fractions with different numerators and different denominators and use symbols >,=, or < to record the comparison.
Use representations to show the sum or difference of fractions.
Decompose fractions in multiple ways as a strategy to add and subtract fractions with like denominators.
Understand mixed numbers as having a whole number part and a fraction part and decompose a mixed number into a sum of whole numbers and/or fractions with the same denominator in more than one way.
Add and subtract mixed numbers with like denominators using representations and various strategies.
Solve word problems involving addition and subtraction of mixed numbers with like denominators.

Essential Questions

How can I use equivalent fractions to help me compare fractions?
How can I add and subtract fractions with like denominators?
How can I add and subtract mixed numbers with like denominators?

Learning Objectives

Use fraction models to recognize equivalent fractions and explain their equivalence by reasoning about the number of parts in the fraction and the number of parts in the whole.
Use multiplication and division to generate equivalent fractions.
Use number line representations with different intervals and use multiplication and division to generate equivalent fractions.
Compare two fractions using the benchmark numbers 0, ½, and 1.
Compare two fractions by generating equivalent fractions with like numerators or like denominators.
Use fraction models to decompose fractions into sums of fractions with the same denominator in more than one way.
Use fraction models to understand addition of fractions as joining parts that refer to the same whole and add fractions with like denominators.
Use representations to show that the sum of fractions with like denominators can be found by adding the numerators and keeping the denominators the same.
Use fraction models to understand subtraction of fractions as separating parts that refer to the same whole and

subtract fractions with like denominators.
Use representations to show that the difference of fractions with like denominators can be found by subtracting the numerators and keeping the denominators the same.
Solve word problems involving addition and subtraction of fractions with like denominators.
Use mixed numbers as another way to write fractions greater than 1 and use fraction models to decompose a mixed number in more than one way and write equations to record their decompositions.
Represent addition of mixed numbers with like denominators using fraction models.
Add mixed numbers using various strategies, such as using equivalent fractions that are greater than 1 and decomposing the mixed numbers.
Represent subtraction of mixed numbers with like denominators using fraction models.
Subtract mixed numbers using various strategies, such as using equivalent fractions and related addition equations.
Represent and solve word problems involving addition and subtraction of mixed numbers with like denominators.

Standards: Content

4.NF.A	Extend understanding of fractions equivalence and ordering
4.NF.A.1	Explain why a fraction □/□ is equivalent to a fraction (□ × □)/(□ × □) 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.
4.NF.A.2	Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
4.NF.B	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers
4.NF.B.3	Understand a fraction □/□ with □ > 1 as a sum of fractions 1/□.
4.NF.B.3.a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
4.NF.B.3.b	Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
4.NF.B.3.c	Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
4.NF.B.3.d	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Standards: Interdisciplinary

9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).

9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.2.5.CAP.6	Compare the characteristics of a successful entrepreneur with the traits of successful employees.
9.2.5.CAP.7	Identify factors to consider before starting a business.
9.1.2.PB.1	Determine various ways to save and places in the local community that help people save and accumulate money over time.
9.1.2.PB.2	Explain why an individual would choose to save money.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.

Assessment Evidence

Formative	Collaborative Activities, Homework, Daily Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Games, Exit Slips, Questioning, Teacher Made Pages, Learning Centers, Problem of the Day, Reveal Workbooks, Fluency Checks, Curious, Activity Based Exploration, Guided Exploration, On My Own.
Summative	Tests, Mid-Chapter Checkpoint assessments, teacher generated assessments
Alternative & Benchmark	Alternative – Reteaching, One on One Conferencing, Learning Centers, student portfolio of assignments, Homework, Higher Order Thinking Problems, Additional leveled practice, orally administered assessments. Benchmark - LinkIt Benchmark Assessments, Totowa TPA
Assessment Evidence Resource	

Instructional Resources

Smartboard, Computers, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Reveal Math Resources, manipulatives, post-it notes, markers, number lines, chart & graph paper, construction paper, glue, scissors, paperclips, crayons, envelopes, dot ink & cards, geo blocks, number cubes/dice.

Instructional Resource List

Curricular Mandates

Below are the curricular requirements as defined in NJ Administrative Code and Statute

	Amistad		Diversity, Equity, and Inclusion
	Holocaust		LGBT and Disabilities (Grades 6-12)
	Climate Change		Asian American & Pacific Islander

Social Emotional Learning (SEL) Competencies

NJ Social and Emotional Learning Competencies & Sub-Competencies

X	Self-Awareness	X	Relationship Skills
X	Responsible Decision-Making	X	Social Awareness
X	Self-Management		

21st Century Skills & Themes

	Global and Cultural Awareness	X	Technology Literacy		Planning and Budgeting
X	Creativity and Innovation		Financial Institutions		Risk Management and Insurance
	Information and Media Literacy		Digital Citizenship		Economic and Government Influences
X	Critical Thinking and Problem Solving		Credit Profile		Career Awareness and Planning
	Civic Financial Responsibility		Financial Psychology		