Unit 8 Reveal Grade 4

Content Area: **Math**
Course(s): **Math**
Time Period: **February**
Length: **2 weeks**
Status: **Published**

Unit Overview

UNIT 8 PLANNER

Fraction Equivalence

PACING: 9 days

LESSON		MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE	LESSON	KEY VOCABULARY
Unit Opener	Folds and Fractions	Explore fractions through paper folding.				
8-1	Equivalent Fractions	Students 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.	Students explain equivalent fractions by reasoning about size and number of parts using complex sentences.	Students actively listen without interruption as peers describe how they approached a complex mathematical task.	8-1	Math Terms equivalent fractions
8-2	Generate Equivalent Fractions using Models	Students use multiplication and division to generate equivalent fractions.	Students discuss how they use multiplication and division to generate equivalent fractions using correct present and past tenses.	Students identify a problem, use creativity to execute problem-solving steps, and identify multiple solutions.	8-2	denominator equivalent fractions numerator
8-3	Generate Equivalent Fractions using Number Lines	Students use number line representations with different intervals and use multiplication and division to generate equivalent fractions.	Students explain how to use number line representations using *can*.	Students develop and execute a plan, including selecting tools for mathematical problem solving.	8-3	denominator equivalent fractions numerator
8-4	Compare Fractions using Benchmarks	Students compare two fractions using the benchmark numbers 0, $\frac{1}{2}$, and 1.	Students discuss comparing two fractions with benchmark numbers using the correct comparative adjectives.	Students demonstrate self-awareness of personal strengths and areas of challenge in mathematics.	8-4	benchmark fraction denominator numerator
8-5	Other Ways to Compare Fractions	Students compare two fractions by generating equivalent fractions with like numerators or like denominators.	Students compare two fractions by generating equivalent fractions with like numerators or like denominators using the term *equivalent*	Students discuss the value of hearing different viewpoints and approaches to problem solving.	8-5	equivalent fractions like denominators like numerators
Math Probe	Comparing Fractions	Gather data on students' understanding of comparing fractions.				
Fluency Practice Unit Review						
Unit Assessment Performance Task						

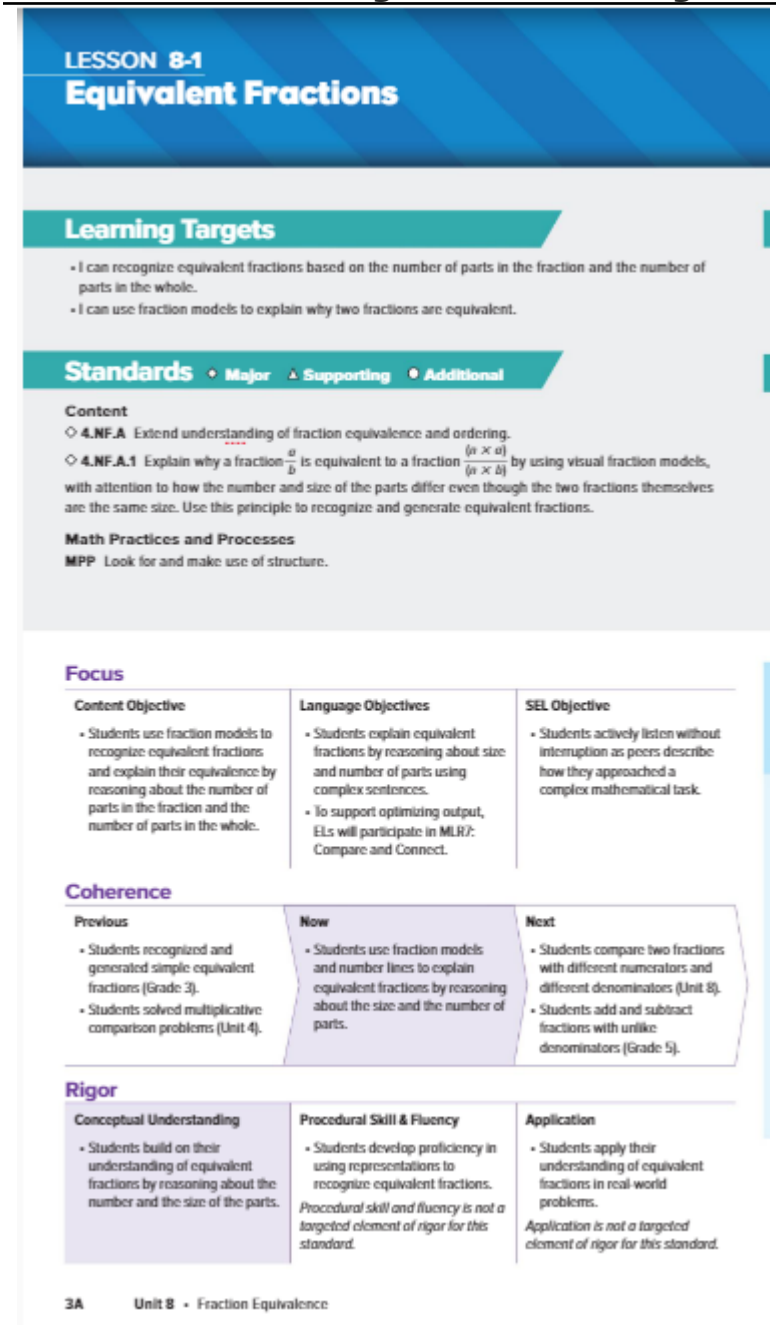
Enduring Understandings

See Above

Essential Questions

See Above

Instructional Strategies and Learning Activities



LESSON 8-1

Equivalent Fractions

Learning Targets

- I can recognize equivalent fractions based on the number of parts in the fraction and the number of parts in the whole.
- I can use fraction models to explain why two fractions are equivalent.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.A** Extend understanding of fraction equivalence and ordering.

◇ **4.NF.A.1** Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

Math Practices and Processes

MPP Look for and make use of structure.

Focus

Content Objective

- Students 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.

Language Objectives

- Students explain equivalent fractions by reasoning about size and number of parts using complex sentences.
- To support optimizing output, ELs will participate in *MLR7: Compare and Connect.*

SEL Objective

- Students actively listen without interruption as peers describe how they approached a complex mathematical task.

Coherence

Previous

- Students recognized and generated simple equivalent fractions (Grade 3).
- Students solved multiplicative comparison problems (Unit 4).

Now

- Students use fraction models and number lines to explain equivalent fractions by reasoning about the size and the number of parts.

Next

- Students compare two fractions with different numerators and different denominators (Unit 8).
- Students add and subtract fractions with unlike denominators (Grade 5).

Rigor

Conceptual Understanding

- Students build on their understanding of equivalent fractions by reasoning about the number and the size of the parts.

Procedural Skill & Fluency

- Students develop proficiency in using representations to recognize equivalent fractions.

Procedural skill and fluency is not a targeted element of rigor for this standard.

Application

- Students apply their understanding of equivalent fractions in real-world problems.

Application is not a targeted element of rigor for this standard.

LESSON 8-2

Generate Equivalent Fractions Using Models

Learning Target

- I can generate equivalent fractions by multiplying or dividing the numerator and denominator by the same non-zero whole number.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.A** Extend understanding of fraction equivalence and ordering.

◇ **4.NF.A.1** Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

Math Practices and Processes

MPP Model with mathematics.

Focus

Content Objective	Language Objective	SEL Objective
• Students use multiplication and division to generate equivalent fractions.	• Students discuss how they use multiplication and division to generate equivalent fractions using correct present and past tenses. • Support sense-making, ELs participate in MLR2: Collect and Display.	• Students identify a problem, use creativity to execute problem-solving steps, and identify multiple solutions.

Coherence

Previous	Now	Next
• Students generated simple equivalent fractions (Grade 3). • Students solved multiplicative comparison problems (Unit 4).	• Students use multiplication and division to generate equivalent fractions.	• Students compare fractions with different numerators and denominators (Unit 8). • Students add and subtract fractions with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students use fraction models to understand the numerical process of multiplying and dividing to generate an equivalent fraction.	• Students develop proficiency in generating equivalent fractions using multiplication and division. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of equivalent fractions to solve problems. *Application is not a targeted element of rigor for this standard.*

LESSON 8-3

Generate Equivalent Fractions Using Number Lines

Learning Target

- I can use number line representations with different intervals to show generating equivalent fractions by multiplying or dividing the numerator and denominator by the same non-zero whole number.

Standards ◇ Major △ Supporting ○ Additional

Content

◇ **4.NF.A** Extend understanding of fraction equivalence and ordering.

◇ **4.NF.A.1** Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $\frac{(n \times a)}{(n \times b)}$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

Math Practices and Processes

MPP Model with mathematics.

Focus

Content Objective	Language Objectives	SEL Objective
• Students use number line representations with different intervals and use multiplication and division to generate equivalent fractions.	• Students explain how to use number line representations using *can*. • Maximize meta-language, MLR5: Co-Craft Questions and Problems.	• Students develop and execute a plan, including selecting tools for mathematical problem solving.

Coherence

Previous	Now	Next
• Students generated simple equivalent fractions (Grade 3). • Students solved multiplicative comparison problems (Unit 4).	• Students use number line representations and multiplication and division to generate equivalent fractions.	• Students compare fractions with different numerators and denominators (Unit 8). • Students add and subtract fractions with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students connect the number line representations to using multiplication and division to generate equivalent fractions.	• Students develop proficiency in generating equivalent fractions using multiplication and division. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of equivalent fractions to solve problems. *Application is not a targeted element of rigor for this standard.*

LESSON 8-4

Compare Fractions Using Benchmarks

Learning Targets

- I can compare two fractions using benchmark numbers.
- I can explain the comparison of two fractions using benchmark numbers and representations.

Standards ◇ Major ▲ Supporting ○ Additional

Content

◇ **4.NF.A** Extend understanding of fraction equivalence and ordering.

◇ **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 $\frac{1}{2}$. 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.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

Focus

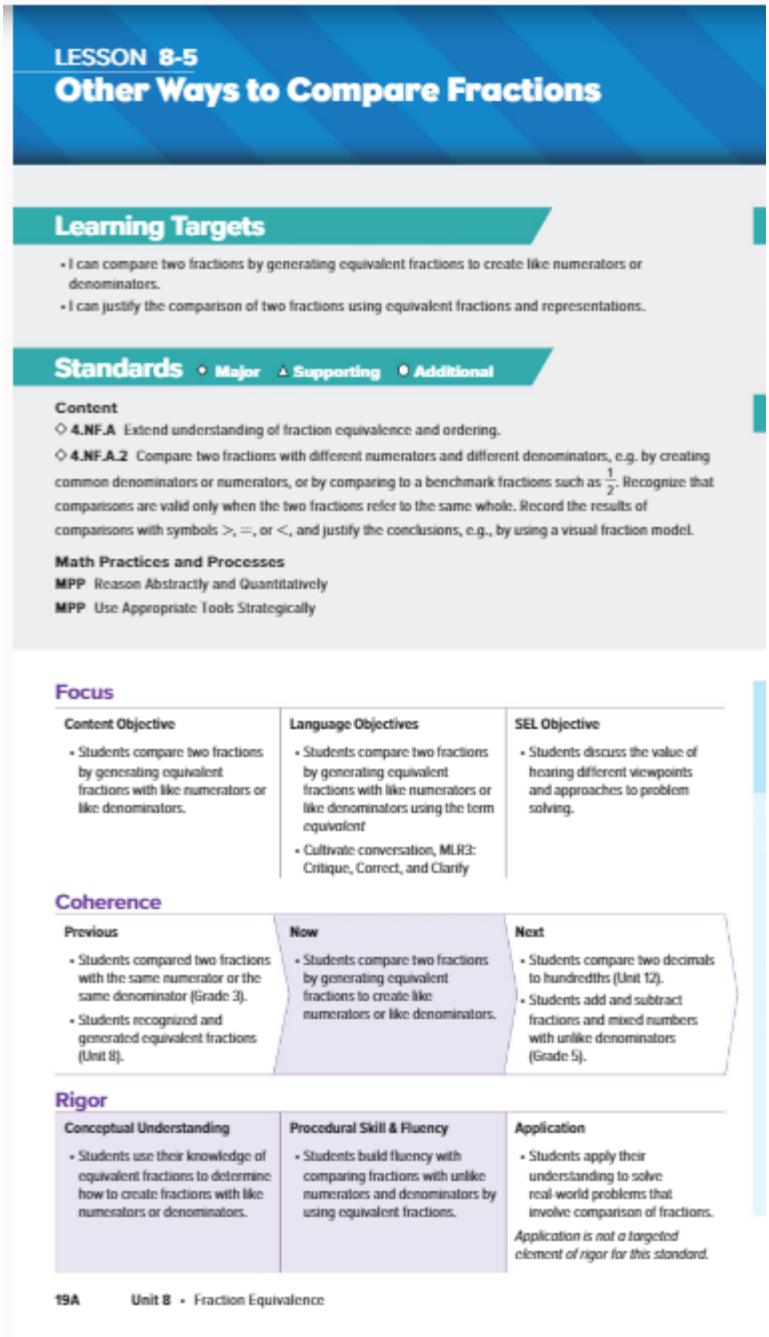
Content Objective	Language Objectives	SEL Objective
• Students compare two fractions using the benchmark numbers 0, $\frac{1}{2}$, and 1.	• Students discuss comparing two fractions with benchmark numbers using the correct comparative adjectives. • Support sense-making, MLR8: Discussion Supports.	• Students demonstrate self-awareness of personal strengths and areas of challenge in mathematics.

Coherence

Previous	Now	Next
• Students compared two fractions with the same numerator or the same denominator (Grade 3). • Students recognized and generated equivalent fractions (Unit 8).	• Students use benchmark numbers to reason about the size of fractions. They use this reasoning to compare the fractions.	• Students compare two decimals to hundredths (Unit 12). • Students use benchmark numbers to estimate sums and differences of fractions and mixed numbers (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students use their understanding of equivalent fractions as they determine the relative size of fractions to the benchmark numbers 0, $\frac{1}{2}$, and 1.	• Students build fluency with comparing fractions with unlike numerators and denominators by using benchmark numbers.	• Students apply their understanding to solve real-world problems that involve comparison of fractions. *Application is not a targeted element of rigor for this standard.*



LESSON 8-5

Other Ways to Compare Fractions

Learning Targets

- I can compare two fractions by generating equivalent fractions to create like numerators or denominators.
- I can justify the comparison of two fractions using equivalent fractions and representations.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.A** Extend understanding of fraction equivalence and ordering.

◇ **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 fractions such as $\frac{1}{2}$. 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.

Math Practices and Processes

MPP Reason Abstractly and Quantitatively

MPP Use Appropriate Tools Strategically

Focus

Content Objective

- Students compare two fractions by generating equivalent fractions with like numerators or like denominators.

Language Objectives

- Students compare two fractions by generating equivalent fractions with like numerators or like denominators using the term *equivalent*
- Cultivate conversation, MLR3: Critique, Correct, and Clarify

SEL Objective

- Students discuss the value of hearing different viewpoints and approaches to problem solving.

Coherence

Previous

- Students compared two fractions with the same numerator or the same denominator (Grade 3).
- Students recognized and generated equivalent fractions (Unit 8).

Now

- Students compare two fractions by generating equivalent fractions to create like numerators or like denominators.

Next

- Students compare two decimals to hundredths (Unit 12).
- Students add and subtract fractions and mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding

- Students use their knowledge of equivalent fractions to determine how to create fractions with like numerators or denominators.

Procedural Skill & Fluency

- Students build fluency with comparing fractions with unlike numerators and denominators by using equivalent fractions.

Application

- Students apply their understanding to solve real-world problems that involve comparison of fractions.

Application is not a targeted element of rigor for this standard.

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Integration of Career Readiness, Life Literacies and Key Skills

9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
9.4.2.CI.1	Demonstrate openness to new ideas and perspectives (e.g., 1.1.2.CR1a, 2.1.2.EH.1, 6.1.2.CivicsCM.2).
9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
9.1.2.CR.2	List ways to give back, including making donations, volunteering, and starting a business.
9.1.2. FI.1	Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).

9.4.2.CT.2	Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.1.2.FP.1	Explain how emotions influence whether a person spends or saves.
9.1.2.FP.3	Identify the factors that influence people to spend or save (e.g., commercials, family, culture, society).
9.4.2.DC.3	Explain how to be safe online and follow safe practices when using the internet (e.g., 8.1.2.NI.3, 8.1.2.NI.4).
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.
9.4.2.DC.6	Identify respectful and responsible ways to communicate in digital environments.
9.4.2.DC.7	Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1).
9.4.2.TL.2	Create a document using a word processing application.
9.4.2.TL.5	Describe the difference between real and virtual experiences.
9.4.2.TL.6	Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
9.4.2.TL.7	Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts (e.g., W.2.6., 8.2.2.ED.2).

Technology and Design Integration

8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
8.1.2.DA.3	Identify and describe patterns in data visualizations.
8.1.2.DA.4	Make predictions based on data using charts or graphs.
8.1.2.AP.4	Break down a task into a sequence of steps.
8.1.2.AP.5	Describe a program’s sequence of events, goals, and expected outcomes.
8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

Interdisciplinary Connections

LA.RI.4	Reading Informational Text
LA.RI.4.1	Refer to details and examples in a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
LA.RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
LA.RI.4.4	Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
LA.RI.4.5	Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.
LA.RI.4.6	Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.

LA.RI.4.8	Explain how an author uses reasons and evidence to support particular points in a text.
LA.RI.4.9	Integrate and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) information from two texts on the same topic in order to write or speak about the subject knowledgeably.
LA.SL.4	Speaking and Listening
LA.SL.4.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
LA.SL.4.2	Paraphrase portions of a text read aloud or information presented in diverse media and formats (e.g., visually, quantitatively, and orally).
LA.SL.4.3	Identify the reasons and evidence a speaker provides to support particular points.
LA.SL.4.4	Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:



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Modifications and Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

Reveal Unit assessments

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

Teacher observation

Checklists

Questioning and Discussion

Quizzes

Summative Assessments

summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

End of Unit assessments

Instructional Materials

See above

Standards

MA.4.NF.A.1	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.
MA.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.