Unit 10 Reveal Grade 4

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

Unit Overview

UNIT 10 PLANNER

Addition and Subtraction Strategies with Mixed Numbers

PACING: 10 days

LESSON		MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE	LESSON	KEY VOCABULARY
Unit Opener	Pattern Block Designs	Students create a design using pattern blocks and use fractions to find the total value.				
10-1	Understand Decomposing Mixed Numbers	Students use mixed numbers as another way to write fractions greater than 1. Students use fraction models to decompose a mixed number in more than one way and write equations to record their decompositions.	Students discuss using different ways to decompose a mixed number using *can*.	Students determine the strategies and analyses necessary to make informed decisions when engaging in mathematical practices.	10-1	Math Terms decompose mixed number
10-2	Represent Adding Mixed Numbers	Students represent addition of mixed numbers with like denominators using fraction models.	Students discuss using fraction models to represent the addition of mixed numbers with like denominators using the correct units of measure.	Students employ techniques that can be used to help maintain focus and manage reactions to potentially frustrating situations.	10-2	mixed number sum
10-3	Add Mixed Numbers	Students add mixed numbers using various strategies, such as using equivalent fractions that are greater than 1 and decomposing the mixed numbers.	Students discuss strategies for adding mixed numbers using *one way/another way*.	Students collaborate with peers and contribute to group effort to achieve a collective mathematical goal.	10-3	equivalent fractions regroup
10-4	Represent Subtracting Mixed Numbers	Students represent subtraction of mixed numbers with like denominators using fraction models.	Students explain how to model subtraction of mixed numbers with like denominators using the word *difference*.	Students recognize and work to understand the emotions of others and practice empathetic responses.	10-4	difference mixed number
10-5	Subtract Mixed Numbers	Students subtract mixed numbers using various strategies, such as using equivalent fractions and related addition equations.	Students explain subtracting mixed numbers using *count/counted on*.	Students recognize personal strengths through thoughtful self-reflection.	10-5	equivalent fractions
10-6	Solve Problems Involving Mixed Numbers	Students represent and solve word problems involving addition and subtraction of mixed numbers with like denominators.	Students discuss adding and subtracting mixed numbers with like denominators using the correct units of measure.	Students practice strategies for persisting at a mathematical task, such as setting a small goal or setting timers for remaining focused.	10-6	bar diagram variable
Math Probe	Word Problems with Mixed Numbers	Gather data on students' understanding of solving word problems involving mixed numbers.				
Unit Review Fluency Practice						
Unit Assessment Performance Task						

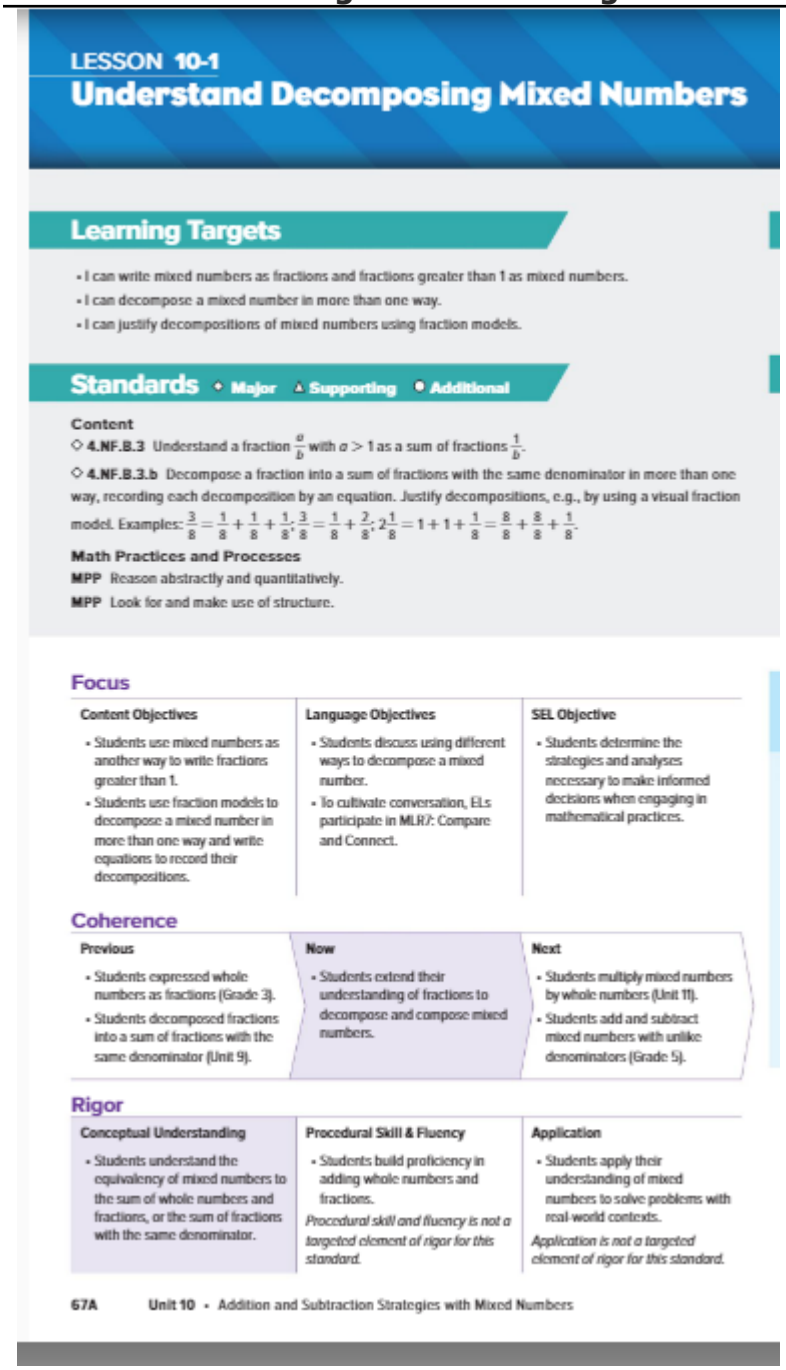
Enduring Understandings

See Above

Essential Questions

See Above

Instructional Strategies and Learning Activities



LESSON 10-1

Understand Decomposing Mixed Numbers

Learning Targets

- I can write mixed numbers as fractions and fractions greater than 1 as mixed numbers.
- I can decompose a mixed number in more than one way.
- I can justify decompositions of mixed numbers using fraction models.

Standards ◆ Major △ Supporting ● Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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. Examples: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Look for and make use of structure.

Focus

Content Objectives	Language Objectives	SEL Objective
• Students use mixed numbers as another way to write fractions greater than 1. • Students use fraction models to decompose a mixed number in more than one way and write equations to record their decompositions.	• Students discuss using different ways to decompose a mixed number. • To cultivate conversation, ELs participate in MLR7: Compare and Connect.	• Students determine the strategies and analyses necessary to make informed decisions when engaging in mathematical practices.

Coherence

Previous	Now	Next
• Students expressed whole numbers as fractions (Grade 3). • Students decomposed fractions into a sum of fractions with the same denominator (Unit 9).	• Students extend their understanding of fractions to decompose and compose mixed numbers.	• Students multiply mixed numbers by whole numbers (Unit 11). • Students add and subtract mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students understand the equivalency of mixed numbers to the sum of whole numbers and fractions, or the sum of fractions with the same denominator.	• Students build proficiency in adding whole numbers and fractions. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of mixed numbers to solve problems with real-world contexts. *Application is not a targeted element of rigor for this standard.*

LESSON 10-2

Represent Adding Mixed Numbers

Learning Targets

- I can represent the addition of mixed numbers with like denominators.
- I can explain how to represent the addition of mixed numbers with like denominators.

Standards ◇ Major △ Supporting ○ Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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.

Math Practices and Processes

MPP Model with mathematics.

MPP Use appropriate tools strategically.

Focus

Content Objective	Language Objectives	SEL Objective
• Students represent addition of mixed numbers with like denominators using fraction models.	• Students discuss representing the addition of mixed numbers with like denominators using the correct units of measure. • To cultivate conversation, ELs participate in MLR8: Discussion Supports.	• Students employ techniques that can be used to help maintain focus and manage reactions to potentially frustrating situations.

Coherence

Previous	Now	Next
• Students developed an understanding of fractions and how to represent them on a number line (Grade 3). • Students added fractions with like denominators (Unit 9).	• Students use fraction models to represent the addition of mixed numbers with like denominators.	• Students multiply mixed numbers by a whole number (Unit 11). • Students add fractions and mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build understanding of strategies to add mixed numbers using fraction models to visualize their thinking.	• Students build proficiency in adding mixed numbers with like denominators. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of adding mixed numbers to solve real-world problems. *Application is not a targeted element of rigor for this standard.*

LESSON 10-3

Add Mixed Numbers

Learning Targets

- I can add mixed numbers with like denominators.
- I can describe how to add mixed numbers with like denominators using various addition strategies.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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.

Math Practices and Processes

MPP Look for and express regularity in repeated reasoning.

Focus

Content Objective	Language Objectives	SEL Objective
• Students add mixed numbers using various strategies, such as using equivalent fractions that are greater than 1 and decomposing the mixed numbers.	• Students discuss strategies for adding mixed numbers using *one way/another way*. • To support sense-making, ELs will participate in MLR6: Three Reads.	• Students collaborate with peers and contribute to group effort to achieve a collective mathematical goal.

Coherence

Previous	Now	Next
• Students developed an understanding of fractions as numbers and how to represent them on a number line (Grade 3). • Students added fractions with like denominators (Unit 9).	• Students explore and discuss strategies for adding mixed numbers with like denominators.	• Students multiply mixed numbers by a whole number (Unit 11). • Students add fractions and mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of mixed numbers to make decisions about which addition strategy to use. *Conceptual understanding is not a targeted element of rigor for this standard.*	• Students build proficiency in using different strategies to add mixed numbers.	• Students apply their understanding of adding mixed numbers to solve problems in a real-world context. *Application is not a targeted element of rigor for this standard..*

LESSON 10-4

Represent Subtracting Mixed Numbers

Learning Targets

- I can represent the subtraction of mixed numbers with like denominators.
- I can explain how to represent the subtraction of mixed numbers with like denominators.

Standards ◇ Major △ Supporting ○ Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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.

Math Practices and Processes

MPP Model with mathematics.

Focus

Content Objective	Language Objectives	SEL Objective
• Students represent subtraction of mixed numbers with like denominators using fraction models.	• Students explain how to model subtraction of mixed numbers with like denominators using the word *difference*. • In order to optimize output, ELs participate in MLR1: Stronger and Clearer Each Time.	• Students recognize and work to understand the emotions of others and practice empathetic responses.

Coherence

Previous	Now	Next
• Students developed an understanding of fractions as numbers and how to represent them on a number line (Grade 3). • Students subtracted fractions with like denominators (Unit 9).	• Students use fraction models to represent the subtraction of mixed numbers with like denominators.	• Students multiply mixed numbers by a whole number (Unit 11). • Students subtract fractions and mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build understanding of strategies to subtract mixed numbers using fraction models to visualize their thinking.	• Students build proficiency in subtracting mixed numbers with like denominators. *Procedural skill and fluency is not a targeted element of rigor for this standard.*	• Students apply their understanding of subtracting mixed numbers to solve problems in a real-world context. *Application is not a targeted element of rigor for this standard.*

LESSON 10-5

Subtract Mixed Numbers

Learning Targets

- I can subtract mixed numbers with like denominators.
- I can explain how to subtract mixed numbers with like denominators using various subtraction strategies.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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.

Math Practices and Processes

MPP Look for and make use of structure.

Focus

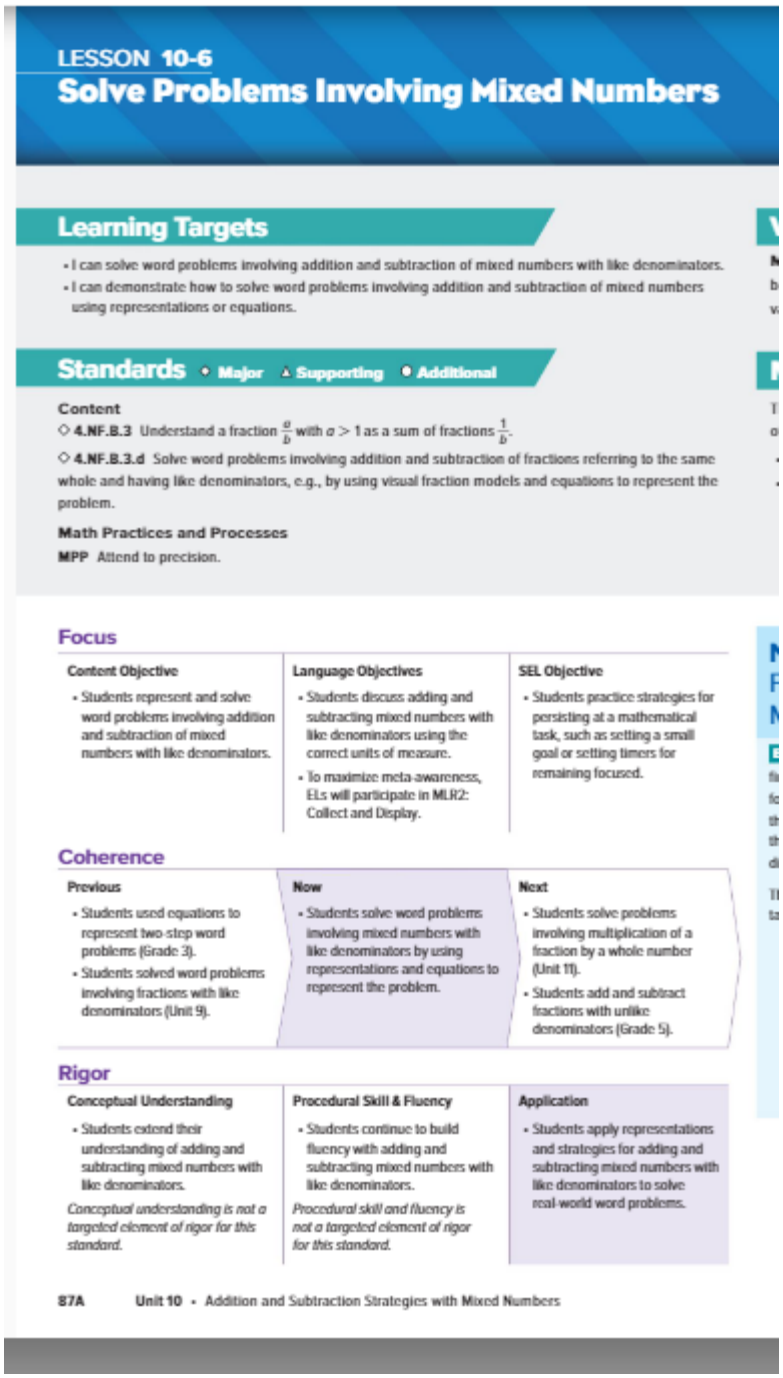
Content Objective	Language Objectives	SEL Objective
• Students subtract mixed numbers using various strategies, such as using equivalent fractions and related addition equations.	• Students explain subtracting mixed numbers using *count/counted on*. • To maximize meta-language, ELs will participate in MLR6: Three Reads.	• Students recognize personal strengths through thoughtful self-reflection.

Coherence

Previous	Now	Next
• Students developed an understanding of fractions as numbers and how to represent them on a number line (Grade 3). • Students subtracted fractions with like denominators (Unit 9).	• Students explore and discuss strategies to subtract mixed numbers with like denominators.	• Students multiply mixed numbers by a whole number (Unit 11). • Students subtract mixed numbers with unlike denominators (Grade 5).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students build on their understanding of mixed numbers to make decisions about which subtraction strategy to use. *Conceptual understanding is not a targeted element of rigor for this standard.*	• Students build proficiency in using different strategies to subtract mixed numbers.	• Students apply their understanding of subtracting mixed numbers to solve problems in a real-world context. *Application is not a targeted element of rigor for this standard.*



LESSON 10-6

Solve Problems Involving Mixed Numbers

Learning Targets

- I can solve word problems involving addition and subtraction of mixed numbers with like denominators.
- I can demonstrate how to solve word problems involving addition and subtraction of mixed numbers using representations or equations.

Standards ◆ Major ▲ Supporting ● Additional

Content

◇ **4.NF.B.3** Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.

◇ **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.

Math Practices and Processes

MPP Attend to precision.

Focus

Content Objective

- Students represent and solve word problems involving addition and subtraction of mixed numbers with like denominators.

Language Objectives

- Students discuss adding and subtracting mixed numbers with like denominators using the correct units of measure.
- To maximize meta-awareness, ELs will participate in MLR2: Collect and Display.

SEL Objective

- Students practice strategies for persisting at a mathematical task, such as setting a small goal or setting timers for remaining focused.

Coherence

Previous

- Students used equations to represent two-step word problems (Grade 3).
- Students solved word problems involving fractions with like denominators (Unit 9).

Now

- Students solve word problems involving mixed numbers with like denominators by using representations and equations to represent the problem.

Next

- Students solve problems involving multiplication of a fraction by a whole number (Unit 11).
- Students add and subtract fractions with unlike denominators (Grade 5).

Rigor

Conceptual Understanding

- Students extend their understanding of adding and subtracting mixed numbers with like denominators.

Conceptual understanding is not a targeted element of rigor for this standard.

Procedural Skill & Fluency

- Students continue to build fluency with adding and subtracting mixed numbers with like denominators.

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

Application

- Students apply representations and strategies for adding and subtracting mixed numbers with like denominators to solve real-world word problems.

Integration of Career Readiness, Life Literacies and Key Skills

PFL.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).
PFL.9.1.2.CR.1	Recognize ways to volunteer in the classroom, school and community.
PFL.9.1.2.CR.2	List ways to give back, including making donations, volunteering, and starting a business.
PFL.9.1.2.FP.1	Explain how emotions influence whether a person spends or saves.
PFL.9.1.2.FP.3	Identify the factors that influence people to spend or save (e.g., commercials, family,

	culture, society).
PFL.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.
PFL.9.1.2.PB.2	Explain why an individual would choose to save money.
TECH.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).
TECH.9.4.2.CI.2	Demonstrate originality and inventiveness in work (e.g., 1.3A.2CR1a).
TECH.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).
TECH.9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
TECH.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).
TECH.9.4.2.DC.6	Identify respectful and responsible ways to communicate in digital environments.
TECH.9.4.2.DC.7	Describe actions peers can take to positively impact climate change (e.g., 6.3.2.CivicsPD.1).
TECH.9.4.2.TL.2	Create a document using a word processing application.
TECH.9.4.2.TL.5	Describe the difference between real and virtual experiences.
TECH.9.4.2.TL.6	Illustrate and communicate ideas and stories using multiple digital tools (e.g., SL.2.5.).
TECH.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

CS.K-2.8.1.2.AP.4	Break down a task into a sequence of steps.
CS.K-2.8.1.2.AP.5	Describe a program’s sequence of events, goals, and expected outcomes.
CS.K-2.8.1.2.CS.1	Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
CS.K-2.8.1.2.DA.1	Collect and present data, including climate change data, in various visual formats.
CS.K-2.8.1.2.DA.3	Identify and describe patterns in data visualizations.
CS.K-2.8.1.2.DA.4	Make predictions based on data using charts or graphs.
CS.K-2.8.2.2.ITH.4	Identify how various tools reduce work and improve daily tasks.

Interdisciplinary Connections

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

MATH.4.NF.B.3	Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
MATH.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.
MATH.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.
MATH.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.