

Unit 4: Fraction Equivalence and Ordering

4th Grade Math

35 Class Meetings

Revised June 2026

Essential Questions

- How can we use benchmark fractions (like $\frac{1}{2}$) to help compare and order fractions?
- How do fractions relate to whole numbers on a number line?
- Why is understanding fraction equivalence important in real-life situations?

Enduring Understandings with Unit Goals

EU 1: Every whole number has factors, and some factors are shared by multiple numbers.

- Determine that every whole number has factors, and some factors are shared by multiple numbers.
- Understand that multiples of a number follow a predictable pattern and extend infinitely.
- Recognize that prime numbers have exactly two factors: 1 and themselves, while composite numbers have more than two factors.
- Discover that common factors and multiples help in problem-solving, including simplifying fractions and finding common denominators.
- Understand that factors and multiples help in recognizing number relationships and patterns in multiplication and division.

EU 2: Fractions are equivalent if they represent the same value, even if they have different numerators and denominators thus helping connect fractions to decimals

- Discover that a fraction represents a part of a whole, and different fractions can represent the same amount.
- Understand that multiplication and division can be used to generate equivalent fractions.
- Utilize visual models, such as number lines and fraction bars, to help understand and compare equivalent fractions.
- Recognize that equivalent fractions can be used to find common denominators when adding and subtracting fractions.
- Understand that fractions and decimals are different ways to represent the same quantity and can be used interchangeably in many situations.
- Recognize that equivalent fractions are important for comparing, ordering, and operating with fractions in real-world situations.

EU 3: Fractions and decimals are numbers that can be represented, compared, ordered, and operated on using visual models, number lines, and place value understanding.

- Understand that equivalent fractions represent the same value, even if they have different numerators and denominators.
- Utilize benchmark fractions (such as $\frac{1}{2}$) help us estimate and compare fractions.
- Understand that fraction equivalence and comparison help in real-world problem-solving situations.
- Determine that fractions are numbers that can be located on a number line, just like whole numbers.
- Understand that fractions can be added and subtracted by composing and decomposing equal-sized parts.
- Recognize that fractions with denominators of 10 and 100 can be represented as decimals and compared using place value.

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Standards

Common Core State Standards:

- **CCSS.4.NF.A:** Extend understanding of fraction equivalence and ordering.
- **CCSS.4.NF.A.1:** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ 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.
- **CCSS.4.NF.A.2:** Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing them 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.
- **CCSS.4.OA.B.4:** 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. Determine whether a given whole number in the range 1—100 is prime or composite.
- **CCSS.4.NF.C.7:** Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.
- **CCSS.4.OA.A.1:** Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ 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.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Factors and Multiples

- Identify factors and multiples of whole numbers.
- Determine if a number is prime or composite and explain why.
- Find the greatest common factor (GCF) and least common multiple (LCM) of two numbers.
- Use factors and multiples to solve real-world problems, such as grouping objects or organizing schedules.
- Recognize and apply factor pairs to understand multiplication and division relationships.

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2. Equivalent Fractions

- Explain why two fractions are equivalent using visual models and mathematical reasoning.
- Generate equivalent fractions by multiplying or dividing both the numerator and denominator by the same number.
- Use number lines and fraction models to compare and identify equivalent fractions.
- Recognize and justify equivalent fractions in real-world contexts.
- Apply knowledge of equivalent fractions to simplify fractions and solve problems.

3. Comparing and Ordering Fractions

- Identify and create equivalent fractions using models, number lines, and multiplication/division.
- Compare two fractions with different numerators and denominators using strategies such as finding a common denominator or comparing them to benchmark fractions.
- Order fractions from least to greatest or greatest to least using number lines and visual models.
- Justify their reasoning when comparing and ordering fractions using mathematical vocabulary and models.
- Apply fraction comparison and ordering skills to solve real-world problems.

Vocabulary and Key Terms: fraction, numerator, denominator, equivalent fractions, common denominator, least common denominator (LCD), greatest common factor (GCF), benchmark fractions, unit fraction, simplify (reduce) fractions, improper fraction, mixed number, compare fractions, order fractions, number line, greater than ($>$), less than ($<$), equal to ($=$), denominator strategy, numerator strategy, fraction strip/bar model

Interdisciplinary Connection:

- ELA

Daily Learning Objectives with *TWPS*

Students will be able to...

- Understand the concept of fractions as parts of a whole and identify the numerator and denominator.
 - *Miguel has 130 blocks. He builds towers by stacking 7 blocks on top of each other. How many towers is he able to build?*
- Use fraction models (e.g., circles, rectangles) to represent fractions and understand how to partition shapes into equal parts. Understand that sometimes fractions represent more than a whole and we can write those fractions as improper fractions or mixed numbers.
 - *Why is Ellie incorrect? What fraction does the shaded part of the model below represent?*
 - *Find what each symbol is equal to.*
- Place fractions and mixed numbers on a number line.
 - *Which one doesn't belong?*
- Recognize and convert improper fractions to mixed numbers and vice versa.
 - *Find the mistake: $327 \times 4 =$*
- Identify equivalent fractions using visual models.

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- *Elaine and Dough had the same problem. They were finding the quotient of 9,047 divided by 8. Below is their work. Who was right? What was the mistake the other student made?*
- Generate equivalent fractions by multiplying or dividing both the numerator and denominator by the same number.
 - *How are they the same? How are they different?*
- Simplify fractions by finding the greatest common factor (GCF) of the numerator and denominator.
 - *Find the rule. Fill in the rest of the table.*
- Simplify fractions by dividing both the numerator and denominator by their GCF.
 - *Mark is organizing a pizza party for his friends. He ordered 8 pizzas and each pizza has 10 slices. If he wants to make sure each friend gets an equal number of slices how many friends can he invite, and how many slices will each friend get?*
- Identify when fractions have the same denominator and use this concept to compare fractions. Identify when fractions have the same numerator and use this concept to compare fractions.
 - *Fill in the blanks to make the equations true.*
- Use benchmark fractions ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$) to estimate and compare other fractions.
 - *Would you rather eat $\frac{3}{8}$ of a pizza or $\frac{3}{6}$ of a pizza?*
- Compare fractions with different denominators by finding a common denominator. **
 - *How many ways can you show the fraction $\frac{3}{5}$?*
- Order fractions and mixed numbers with like denominators and like numerators from least to greatest using visual models and number lines.
 - *Find three fractions equal to $\frac{2}{3}$*
- Order fractions and mixed numbers with different denominators by finding a common denominator.
 - *Order these fractions from least to greatest: $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{3}$, $\frac{5}{6}$.*
- Add and subtract fractions with like denominators.
 - *Fill in the chart to match the equivalent fractions*
- Add and subtract mixed numbers with like denominators.
 - *Would you rather have $\frac{3}{5}$ pan of brownies or $\frac{6}{10}$ pan of brownies.*
- Add and subtract mixed numbers with like denominators with problems that involve regrouping.
 - *Find the mistake: $\frac{7}{8} + \frac{2}{8} = \frac{9}{16}$*
- Multiply a whole number by a fraction. Show multiplying fractions as repeated addition.
 - *Fill in the blank to make the equation true. $\underline{\hspace{1cm}} + \frac{5}{8} = 1 \frac{3}{8}$*
- Find part of a set by multiplying a fraction by a whole number.
 - *Decide whether each expression is equal to $1 \frac{2}{6}$.*
- Solve word problems involving the comparison of fractions.
 - *Math Mobile.*
- Solve word problems involving addition and subtraction of fractions.
 - *True or False? $\frac{5}{12}$ is bigger than $\frac{3}{5}$ because the denominator is bigger.*
- Solve word problems involving multiplying a fraction by a whole number
 - *Decide whether each fraction is equal to $\frac{6}{8}$.*
- Relate fractions and decimals.
 - *What shape would be the 84th term?*
- Compare decimals using greater than, less than, and equal to.

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- *Two classes wrote poems for two months. Mr. Chang's class wrote 31 poems in September. They wrote 3 times as many poems in October as they did in September. Mrs. Steele's class wrote 23 poems in September. They wrote 4 times as many poems in October as they did in September. Compare the number of poems each class wrote in October.*
- Place decimals on a number line
 - *Compare the fractions and decimals using <, >, or =.*
- Add fractions with denominators of 10 and 100.
 - *Select all the numbers that make this comparison true.* $x \frac{2}{6} > 1$

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Paragraph frames and sentence starters
- Teacher modeling
- Think-write-pair-share and small-group discussions
- Graphic organizers
- Accountable talk
- Homework
- Word walls with visuals
- Small group instruction
- Visual exemplars with teacher and student critiques
- Text and video chunking
- Spiraling back to guiding questions

EL Differentiation Strategies

- Word Banks and Word Walls with visuals
- TWPS (Think, write, pair, share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit teacher modeling
- Key vocabulary
- Graphic organizers
- Strategic Grouping
- Non-verbal assessments

Assessments

FORMATIVE ASSESSMENTS:

- Do Now
- Academic Discourse
- Exit Slips
- Accountable Talk Discussions
- Completed notes
- Homework
- Performance Task -- "School Garden" Performance Task
 - Teacher's rubric/scoring guide

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SUMMATIVE ASSESSMENTS:

- Quiz: Factors and Multiples, Equivalent Fractions, Comparing and Ordering Fractions (EU1, EU2, and EU3)
- IAB
- Unit Task: “School Garden” Performance Task (EU1, EU2 and EU3)

Unit Task

Unit Task Name: “School Garden” Performance Task

Description: Each student is responsible for designing a new school garden. The garden will have different sections for flowers, vegetables, and paths. Each section needs to be divided into specific fractional areas, and students will need to compare, order, and find equivalent fractions to make sure the areas add up correctly.

Evaluation: Teacher’s Scoring Guide

Unit Resources

- Google Classroom
- Pear Assessment
- Math In Focus
- Math Antics
- State Common Core Standards Transition Tasks
- Match Fishtank
- Worksheets
- Individual White boards
- Interactive notebook
- Laptops
- SBAC Prep Online