

Unit 2: Fraction and Decimal Operations

6th Grade Honors Mathematics

14 Class Meetings

Revised January 2026

Essential Questions

- When or why would it be useful to know the greatest common/least common factor of a set of numbers?
- How can you use quotients of fractions to solve real world problems?
- What are ways we use multi-digit decimals in our everyday life?

Enduring Understandings with Unit Goals

EU 1: Every number can be decomposed into a product of prime factors. These prime factors can be used to find greatest common factors and least common multiples between pairs of numbers.

- Find the prime factorization of a number
- Solve application problems using the greatest common factor and least common multiple

EU 2: The general approach to dividing with fractions can be applied to real-world problems involving division, such as partitioning into equal groups and finding missing factors.

- Solve problems involving division with fractions

EU 3: Standard algorithms for computing with decimals are efficient strategies to add, subtract, multiply, and divide decimals.

- Add, subtract, multiply, and divide decimals using the standard algorithm

Standards

Common Core State Standards:

- **6.NS.A.1:** Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.
- **6.NS.B.4:** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
- **6.NS.B.2:** Fluently divide multi-digit numbers using the standard algorithm.
- **6.NS.B.3:** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

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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. Greatest Common Factor/Least Common Multiple

- Determine the prime factorization of number
- Find the greatest common factor/ least common multiple of two or more numbers
- Vocabulary-prime number, composite number, factor, multiple, greatest common factor, least common multiple, prime factorization

2. Fraction Operations

- Add, subtract, and multiply fractions.
- Divide a fraction by a whole number
- Divide a whole number by a fraction using visual models
- Solve word problems involving fractions (all operations).
- Vocabulary-sum, difference, product, quotient, divisor, dividend, reciprocal

3. Decimal Operations

- Fluently divide whole numbers using the standard algorithm
- Understand decimal place value
- Compare, order and round decimals
- Add and subtract decimals
- Multiply decimals
- Divide numbers with decimal quotients
- Divide decimals by whole numbers
- Divide decimals by decimals
- Solve decimal problems using all four operations
- Divide multi-digit whole numbers
- Vocabulary-place value, sum, difference, product, quotient, divisor, dividend, long division

Interdisciplinary Connection:

- Language Arts – Reading strategies for solving Word Problems; vocabulary; CER writing strategies
- Humanities:
 - Unit 1: Many Faces, Many Places

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- Science –
 - Unit 1: Weather Patterns
 - Unit 2: Earth and Universe
 - Unit 3: Inside the Earth

Daily Learning Objectives with *TWPS*

Students will be able to...

- Compare and contrast prime and composite numbers and use prime factorization to represent numbers as products of prime factors using the rules of divisibility
 - *TWPS - Which number does not belong? (36, 99, 9. Or 123) Explain your mathematical thinking.*
- Evaluate the greatest common factors of two whole numbers up to 100
 - *TWPS-Error Analysis of Prime Factorization: A student was asked to write the prime factorization of 60. This is what they wrote: $60=2x2x3x5x5$. Do you agree or disagree with the student's prime factorization? Explain your mathematical thinking.*
- Calculate the least common multiple of two whole numbers less than or equal to 12
 - *TWPS- A bakery is making gift boxes of cookies. They have 48 chocolate chip cookies and 72 oatmeal cookies. The bakery wants to make boxes that have the same number of each type of cookie and no cookies left over. How many gift boxes will they need. Explain your mathematical thinking.*
- Apply the greatest common factor and least common multiple to solve mathematical problems
 - *TWPS- Two friends, Mia and Leo, are bouncing basketballs. Mia bounces her ball every 6 seconds, and Leo bounces his ball every 8 seconds. After how many seconds will both Mia and Leo bounce their balls at the same time again? Explain your mathematical thinking.*
- Compute and simplify the product of two or more fractions
 - *TWPS-Error Analysis Word Problem: Jordan ran $4\frac{2}{3}$ miles during track practice. When recording his distance, he wanted to write it as an improper fraction. Here's what Jordan did: " $4\frac{2}{3} = 4 \times 3 = 12$, and then I add 3 to get $15/3$." Jordan says $4\frac{2}{3} = 15/3$. Write your response using CER format:
*Claim: What is the correct improper fraction for $4\frac{2}{3}$?
Evidence: Write your correct conversion steps.
Reasoning: Explain why Jordan's process led to an incorrect answer.**
- Produce quotients of fractions, whole numbers, and mixed numbers*
 - *TWPS-Which fraction model does not belong? ($1/8$, $1/3$, $2/8$, or $6/8$) Explain your mathematical thinking.*
 - *TWPS- SBAC Fraction Division Problem: A bird feeder holds 5 pounds of birdseed. A scoop of birdseed is $2/5$ of a pound. Enter the number of scoops of birdseed it takes to completely fill the empty bird feeder. Explain your mathematical thinking.*
- Fluently add and subtract decimals using the standard algorithm
 - *TWPS – How much did they spend? Explain your mathematical thinking. (menu question)*
- Fluently divide multi-digit numbers using the standard algorithm. *
 - *TWPS- Would you rather sell 50 cookies for \$0.25 each with a cost to make them at \$5 or sell 50 cookies for \$15.00 with a cost to make them at \$8?*

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- *TWPS- SBAC (Fraction & Decimal application) Vicki bought some items from the store. The table shows the store price for these items. Vicki spent between \$18 and \$20. Which combinations could she have purchased? Select all that apply.*
- Use the standard algorithm to fluently multiply and divide multi-digit decimals *
- *TWPS- Multiplication of Decimals: Joe wanted to buy each of his friends some candy from the store. He bought 15 pounds of candy to share with them. The candy cost \$1.29 per pound. How much money did Joe spend on the candy?*
- *TWPS- Decimal Division Error Analysis-John solved the following decimal division problem. He made an error in his long division. Re-work the problem yourself, and find John's error. What was his mistake? Explain your mathematical thinking.*
 $3.02 \div 1.8 = 0.112$

Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Guided notes
- Student-led instruction/discussions
- TWPS
- Independent problem-solving
- Collaborative problem-solving
- Graphic Organizer
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Homework
- Word walls with visuals
- Small group instruction
- Manipulatives
- Interactive Notebook
- Highlighted directions
- CER (Claim, Evidence, Reason)

EL DIFFERENTIATED INSTRUCTION:

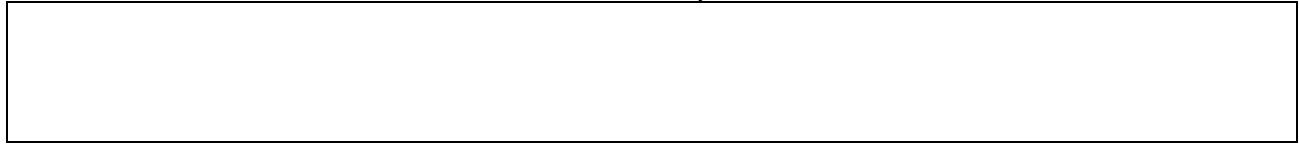
- Word Walls with visuals
- TWPS (Think, Write, Pair, Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments
- Modified classwork and homework

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Assessments

FORMATIVE ASSESSMENTS:

- Warm-ups
- TWPS
- CER
- Whiteboards
- Mid-class check-ins (Fist of 5; Thumbs up/mid/down)
- Exit Slips
- Accountable Talk Discussions
- Student-led instruction
- Classwork
- Homework

SUMMATIVE ASSESSMENTS:

- IAB- The Number System
- Pear Assessment Quiz - EU1
- Pear Assessment Quiz – EU2
- Unit 2 Test- Pear Assessment -EU1, EU2, EU3
- Performance Task- Lemonade Stand EU1, EU2, EU3

Unit Task

Unit Task Name: Lemonade Stand

Description: In this activity, students are given the task of opening a lemonade stand. They must use their knowledge of decimal operations to calculate the cost of each expense including paper goods, the ingredients and advertising. (EU 3) There are situational problems to solve involving profit and increasing sales. This task provides students with a real-world situation that the students can relate to, analyze, and define.

Evaluation: Unit 2 Summative Performance Task Assessment Rubric

Unit Resources

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- Pear Assessment
- Engageny
- Math In Focus
- Match Fishtank
- Khan Academy
- SBAC Prep Online
- Math Antics
- Two Truths and a Lie
- Education.com
- Commoncoresheets.com
- Maneuvering the Middle
- Individual White boards
- Interactive notebook