

# Unit 3: Fraction and Decimal Operations

## 6<sup>th</sup> Grade Mathematics

16 Class Meetings

*Revised March 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.*
  - *TWPS- Cupcake says, "11 is a prime number and 4 is a composite number." Franklin disagrees and says, "11 is composite and 4 is prime." Who is correct and why? Explain.*
- Evaluate the greatest common factors of two whole numbers up to 100
  - *TWPS- Would you rather have a stack of 14 pennies, 7 nickels, 2 dimes, and 1 quarter or a stack of 2 pennies, 4 nickels, 2 dimes, and 2 quarters?*
- Calculate the least common multiple of two whole numbers less than or equal to 12
  - *TWPS- Which of the three statements below is a lie? Explain your mathematical thinking. Two Truths and a Lie, GR6 #9*
- Apply the greatest common factor and least common multiple to solve mathematical problems\*\*
  - *TWPS- Which of the three statements below is a lie? Explain your mathematical thinking Two Truths and a Lie, GR6 #18*
  - *TWPS- Find the GCF & LCM of the following numbers. 55 and 100; 16 and 10 Explain your mathematical thinking.*
- Compute and simplify the product of two or more fractions
  - *TWPS- Would you rather put \$3 in the bank, and have it triple each week for 4 weeks or put \$4 in the bank and have it quadruple each week for 3 weeks??*
- 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- What are the steps when dividing fractions? Solve the following... $2 \div 1/3$  and  $1/2 \times 1/3$*
- Fluently add and subtract decimals using the standard algorithm\*
  - *TWPS – How much did they spend? (menu question)*
  - *TWPS- Describe the error(s) the student made when solving the following problem. Explain your mathematical thinking.*
- 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?*
  - *TWPS- Bridget got a new camera to take photos. She has already taken 427 photos. How many pictures, on average, has she taken each day if she owned her camera for 15 days? Explain using CER format.*
  - *TWPS- A teacher wants to make new shoes for the upcoming holiday season. She has 5 yards*

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*of fabric and each shoes uses  $\frac{1}{2}$  of a yard of fabric. How many pairs of shoes can the teacher make?*

- Use the standard algorithm to fluently multiply and divide multi-digit decimals \*
- TWPS- Which of the three statements below is a lie? Explain your mathematical thinking Two Truths and a Lie, GR6 #8
- TWPS: Describe the error(s) the student made when solving the following problem. Explain your mathematical thinking.

### 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 3 Test- Pear Assessment -EU1, EU2, EU3
- Performance Task- Baking Cookies

### Unit Task

**Unit Task Name:** Baking Cookies

**Description:** In this activity, students are given the task of making cookies for a party. They must use their knowledge of decimal operations to calculate the cost of each expense for the recipe and make change from purchasing with a \$50.00 bill. (EU 3) The concept of the division of fractions comes into play when students are asked to figure out how to cut the recipe into thirds (EU2). This task provides students with a real-world situation that the students can relate to, analyze, and define.

**Evaluation:** Unit 3 Summative Performance Task Assessment Rubric

### Unit Resources

- Pear Assessment
- Engage NY
- Math In Focus
- Match Fishtank
- Khan Academy
- Worksheets
- Calculator

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- Laptops
- SBAC Prep Online
- Math Antics
- Two Truths and a Lie
- Education.com
- Commoncoresheets.com
- Maneuvering the Middle
- Interactive/Guided Notes