# Unit 1: Positive Rational Numbers

Content Area: **Mathematics**
Course(s):
Time Period: **September**
Length: **3-4 weeks**
Status: **Published**

## Essential Questions

- How can I use models and real world examples to add, subtract, multiply, and divide decimals and fractions?
- How can I use algorithms to add, subtract, multiply, and divide decimals and fractions?
- How can I use strategies that have been taught to solve multistep problems with fractions and decimals?

## Enduring Understandings

- Algorithms can be used to add, subtract, and multiply decimals fluently
- An algorithm can be used to divide whole numbers and decimals fluently
- Visual models, such as area models and number lines can be used to multiply fractions, divide fractions, and divide fractions by fractions. The product of two fractions can be found by multiplying the numerators and denominators. Multiplying mixed numbers is an extension of multiplying fractions.
- Dividing a whole number by a fraction is equivalent to multiplying the whole number by the reciprocal of the fraction.
- Dividing by a fraction is equivalent to multiplying by the fraction's reciprocal.
- The quotient of mixed numbers can be found by writing the mixed numbers as fractions and multiplying the dividend by the divisor's reciprocal.

## Critical Knowledge and Skills

**Vocabulary**

Reciprocal, Sum, Difference, Product, Quotient, Place Value, Fraction, Equivalent, Numerator, Denominator

Learning Objectives

- 1-1: Fluently Add, Subtract, and Multiply Decimals
    - Add and subtract decimals with precision
    - Multiply decimals
    - Add, subtract, and multiply decimals to solve real-world problems
- 1-2: Fluently Divide Whole Numbers and Decimals
    - Use place-value structures to divide whole numbers and decimals

    - Divide whole numbers and decimals to solve real world problems
- 1-3: Multiply Fractions
    - Use models to multiple fractions
    - Multiply the numerators and then the denominators to find the product of two fractions
    - Multiply mixed numbers
- 1-4: Understand Division with Fractions
    - Use models to divide fractions
    - Use equations to divide with fractions
- 1-5: Divide Fractions by Fractions
    - Use models to divide fractions by fractions
    - Use an algorithm to divide fractions by fractions
- 1-6: Divide Mixed Numbers
    - Divide mixed numbers
    - Estimate the quotient of mixed numbers
- 1-7: Solve Problems with Rational Numbers
    - Solve multistep problems with fractions and decimals

## Resources

- Lesson Resources
    - Student Edition
    - Additional Practice Workbook
    - Teaching Resources
        - Reteach to Build Understanding, Additional Vocabulary Support, Build Mathematical Literacy, Enrichment
    - Digital Lesson Courseware
        - Today's Challenge, Visual Learning Animation Plus, Key Concepts, Additional Examples, 3-Act Mathematical Modeling, Online Practice powered by MathXL for School, Virtual Nerd Video Tutorials, Animated Glossary, Digital Math Tools, Online Math Games
- Topic Resources

- Student's Edition
    - Review What You Know, Build Literacy in Mathematics, Mid-Topic Checkpoint and Performance Task, Topic Review, Fluency Practice Activity, STEM Project
- Digital Topic Support for Students
    - Math Practice Animations, STEM Project, 3-Act Mathematical Modeling Lesson

## Standards for Mathematical Content

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|---|---|
| CCSS.Math.Content.6.NS.A.1 | Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. |
| CCSS.Math.Content.6.NS.B.2 | Fluently divide multi-digit numbers using the standard algorithm. |
| CCSS.Math.Content.6.NS.B.3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. |

## Standards for Mathematical Practice

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|---|---|
| CCSS.Math.Practice.MP1 | Make sense of problems and persevere in solving them. |
| CCSS.Math.Practice.MP2 | Reason abstractly and quantitatively. |
| CCSS.Math.Practice.MP3 | Construct viable arguments and critique the reasoning of others. |
| CCSS.Math.Practice.MP4 | Model with mathematics. |
| CCSS.Math.Practice.MP5 | Use appropriate tools strategically. |
| CCSS.Math.Practice.MP6 | Attend to precision. |
| CCSS.Math.Practice.MP7 | Look for and make use of structure. |
| CCSS.Math.Practice.MP8 | Look for and express regularity in repeated reasoning. |

## INTERDISCIPLINARY CONNECTIONS

## NJSLS Companion Standards Grades 6-8

RST.6-8.3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that

information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.