4 Math Unit 11: Multiply Fractions by Whole Numbers

Content Area: **Mathematics**
Course(s):
Time Period: **Marking Period 3**
Length: **9 days**
Status: **Published**

Unit Overview

Multiply Fractions by Whole Numbers

In this unit, students apply what they learned in Grade 3 and earlier in Grade 4 about composing fractions, together with their understanding of multiplication, to multiply fractions and mixed numbers by whole numbers. Students begin by representing multiplication of a fraction by a whole number as repeated addition in the same way they represented multiplication with whole numbers. they see that multiplication of one factor by a whole number involves combining that number of copies of the factor. They represent this using visual fraction models and number lines. Then they symbolically represent the multiplication of any fraction by as whole number.

Students will extend their ability to add and subtract fractions and compare fractions. These include:

- **Multiply a Unit Fraction by a Whole Number:** Students use fraction models to represent a fraction as a multiple of a unit fraction.
- **Multiply a Fraction by a Whole Number:** Students use visual fraction models to multiply a fraction by a whole number.
- **Understand Multiplication of a Fraction by a Whole Number:** Students use their understanding of fractions as multiples of unit fractions to multiply a fraction by a whole number.
- **Multiply a Mixed Number by a Whole Number:** Students use different strategies to multiply mixed numbers by whole numbers.
- **Solve Problems Involving Fractions and Mixed Numbers:** Students solve word problems involving the multiplication of fractions and mixed numbers by whole numbers.

What Students Are Learning

- Students use their prior understanding of unit fractions to represent and solve problems involving the multiplication of a unit fraction by a whole number.
- Students use their understanding of multiples to multiply fractions and mixed numbers by whole numbers.
- Students solve word problems involving multiplication of fractions and mixed numbers by whole numbers.

- Find a Pattern, Make a Pattern
- What's Another Way to Write It?
- Notice & Wonder

Standards

4.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
4.NF.B.4.a	Understand a fraction a/b as a multiple of $1/b$.
4.NF.B.4.b	Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a

	fraction by a whole number.
4.NF.B.4.c	Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

Materials

Core Materials:

Reveal Math

11.1 Represent Multiplication of a Unit Fraction by a Whole Number

11.2 Understand Multiplying a Fraction by a Whole Number

11.3 Multiply a Fraction by a Whole Number

11.4 Multiply a Mixed Number by a Whole Number

11.5 Solve Problems Involving Fractions and Mixed Numbers

Supplemental Materials:

- ST Math
- Happy Numbers
- 3 Act Lessons
- Building Fact Fluency Kit
- Brainingcamp Manipulatives
- Nearpod Lessons
- Brainpop Resources
- Online Resources

Technology

DA	Data & Analysis
	Data can be organized, displayed, and presented to highlight relationships.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
	Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.

8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.

Assessment

Formative Assessment

- Unit Readiness Diagnostics
- Lesson Checks
- Exit Tickets
- Teacher Observation

Summative Assessment

- Unit Assessment Performance Task
- Benchmark Tests
- Alternative Assessments: Performance Tasks & Projects

Accommodations & Modifications

Special Education

Differentiated Instruction			
Accommodate Based on Students Individual Needs: Strategies			
Time/General • Extra time for assigned tasks • Adjust length of assignment • Timeline with due dates for reports and projects • Communication system between home and school • Provide lecture notes/outline	**Processing** • Extra response time • Have students verbalize steps • Repeat, clarify, or reword directions • Mini-breaks between tasks • Provide a warning for transitions • Reading partners	**Comprehension** • Precise step-by-step directions • Short manageable tasks • Brief and concrete directions • Provide immediate feedback • Small group instruction • Emphasize multi-sensory	**Recall** • Teacher-made checklist • Use visual graphic organizers • Reference resources to promote independence • Visual and verbal reminders • Graphic organizers

		learning	
Assistive Technology • Computer/whiteboard • Tape recorder • Spell-checker • Audio-taped books	**Tests/Quizzes/Grading** • Extended time • Study guides • Focused/chunked tests • Read directions aloud	**Behavior/Attention** • Consistent daily structured routine • Simple and clear classroom rules • Frequent feedback	**Organization** • Individual daily planner • Display a written agenda • Note-taking assistance • Color code materials

504

- In class/pull out support with special ed teacher Additional time during intervention time
- Preferred seating
- Questions read aloud
- Extended time for completing tasks Graphic organizers
- Vocabulary support Mnemonic devices
- Songs/videos to reinforce concepts Limit number of questions
- Scribe Manipulatives Calculators Reteach pages Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System Another look homework video
- Practice buddy

ELL

- Translation device/dictionary
- In class/pull out support with ESL teacher
- Preferred seating
- Questions read aloud
- Extended time for completing tasks
- Graphic organizers
- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Math Diagnosis & Intervention System

At-risk of Failure

- Additional time during intervention time
- Questions read aloud
- Graphic organizers

- Vocabulary support
- Mnemonic devices
- Songs/videos to reinforce concepts
- Manipulatives
- Calculators
- Reteach pages
- Leveled homework
- Lesson intervention activities
- Math Diagnosis & Intervention System
- Another look homework video
- Practice buddy

Gifted & Talented

- Independent projects
- Enrichment pages
- Online games
- Leveled Homework
- Extension Activities
- Today's Challenge

Interdisciplinary Connections

RI.CI.4.2	Summarize an informational text and interpret the author's purpose or main idea citing key details from the text.
ETS1.B	Developing Possible Solutions Testing a solution involves investigating how well it performs under a range of likely conditions.

Career Readiness, Life Literacies & Key Skills

9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.4.5.CT	Critical Thinking and Problem-solving The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
9.4.5.CT.1	Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2).
9.4.5.CT.3	Describe how digital tools and technology may be used to solve problems.
9.4.5.CT.4	Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.CivicsCM.3).

9.1.5.FI	Financial Institutions
	People can choose to save money in many places such as home in a piggy bank, bank, or credit union.
9.1.5.FI.1	Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.

Career Ready Practices

STEM CAREER: Chef Student talks about the work of chefs. Student explains how to use multiplication of fractions by whole numbers.

- CRP1. Act as a responsible and contributing citizen and employee.
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.