

UNIT 2 PLANNING OPTION

5TH GRADE

UNDERSTANDING MULTIPLICATION & DIVISION OF FRACTIONS

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Identify Essential Questions

1. *How can I use my understanding of multiplication and division to solve real world problems involving multiplication and division of fractions?*
2. *How can I use information from the line plot to solve problems involving operations with fractions?*

Clarify Standards

- Read overview of year to see progression of standards throughout the year
- Vertical alignment:
 - Progression Documents
 - Instructional Strategies
 - ECM book
 - 4th Grade
 - Multiply a fraction by a whole number (4.NF.4)
 - The fraction $a/b = a \times (1/b)$ (4.NF.4a)
 - The problem $c \times a/b$ can be written as $(c \times a) \times (1/b)$ (4.NF.4b)
 - Solve word problems (4.NF.c)
- Content Emphasis
 - Write a division of a whole numbers as a fraction (5.NF.2)
 - Multiply a fraction or whole number by a fraction (5.NF.3)
 - Explain multiplication as resizing by comparing factors of related products (5.NF.5a)
 - Examine whether fractions will increase or decrease when you multiply by a fraction greater than or less than 1 (5.NF.5b)
 - Divide unit fractions by whole numbers (5.NF.7a) and a whole number and whole numbers by unit fractions (5.NF.7b)
- Look for “Big Ideas” and Coherency within standards
 - Placed standards together so teachers can develop lesson plans and assess more than one standard at a time
 - 5.NF.5a and 5.NF.5b
 - 5.NF.6, 5.NF.7b, and 5.NF.7c
 - 5.NBT.5 and 5.NBT.6

Divide the Unit & Distribute Standards

Week	Standards	Structure/Resource Type
1	5.NF.3 5.NBT.6 5.NF.5A During discussion 5.NF.5B During discussion	• Pose equal sharing problems • Whole number divided by whole number = whole number • Whole number divided by whole number= mixed number • Whole number divided by whole number=fraction
2	5.NF.3 5.NBT.6 5.NF.5A During discussion 5.NF.5B During discussion	• Pose equal sharing problems • whole number divided by whole number = whole number • Whole number divided by whole number= mixed number • Whole number divided by whole number=fraction
3	5.NF.4 5.NF.6 5.NF.7 5.NF.5A During discussion 5.NF.5B During discussion 5.NBT.5 5.NBT.6	• Multiple group problems • Whole number x fraction • Fluency • 4 digit divided by 1 digit (number talks)
4	5.NF.4 5.NF.6 5.NF.7 5.NF.5A During discussion 5.NF.5B During discussion 5.NBT.5 5.NBT.6	• Multiple group problems • Whole number x fraction • Fluency • 4 digit divided by 1 digit (number talks)
5	5.NF.3 5.NF.4 5.NF.6 5.NF.7 5.NBT.6 5.NF.5.A During discussion 5.NF.5.B During discussion	• Look online at unit resources and choose those related to the standards being taught each week. • https://grade5commoncoremath.wikispaces.hcpss.org/Grade+1+Home • http://www.engageny.org/resource/grade-5-mathematics
6	5.MD.2 5.NF.5.A 5.NF.5.B	• Denominators $\frac{1}{8}$, $\frac{1}{2}$, $\frac{1}{4}$ • Look online at unit resources and choose those related to the standards being taught each week. • https://grade5commoncoremath.wikispaces.hcpss.org/Grade+1+Home • http://www.engageny.org/resource/grade-5-mathematics

Gather and Study Resources

Assessments

Number Talks for Unit 2

Planning Options

Lesson Resources





Extending Children's Mathematics: Fractions and Decimals
by Susan B. Empson and Linda Levi
This book is referenced throughout the unit and school year to guide your instruction with fractions. The authors share how a student's understanding of whole-number operations can be extended to fractions and decimals. Full of examples and student work, it provides rich understanding and insight to problem solving with fractions. Page xxiv provides correlation between this book and the CCSS.
[Guide for Using Extending Children's Mathematics](#)

[Instructional Progression of Fraction and Decimal Operations](#)



Field Trips and Fundraisers: Introducing Fractions
This Contexts for Learning Mathematics unit introduces fractions and fair sharing through a series of investigations set in context of the fair sharing of submarine sandwiches on a field trip. Students work with these big ideas: fractions are relations - the size or amount of the whole matters; fractions may represent division with a quotient less than one; with unit fractions, the greater the denominator, the smaller the piece is; pieces don't have to be congruent to be equivalent; and for equivalence, the ratio must be kept constant. 10 days of lessons (5.NF.3, 5.NF.4)



Minilessons for Operations with Fractions, Decimals, & Percents
This book contains minilessons that you can choose from as you consider the needs of your students and can be used throughout the school year. These are more guided and explicit and were designed to be used at the start of your math instruction - lasting 10 to 15 minutes. See the overview (p. 5-12) for further details regarding the minilessons.

Contextual Problem Solving Situations In the tasks below, students will develop their understanding of operations with fractions through contextual situations that will help them build meaning for fractions. The situations are grouped in a "suggested" instructional sequence that begins with equal sharing situations - situations about which children have strong intuitive understanding. Most students can draw on their experiences of sharing food and other items with siblings or friends to help them solve these problems. It is then easier to make situations with operations of fractions.

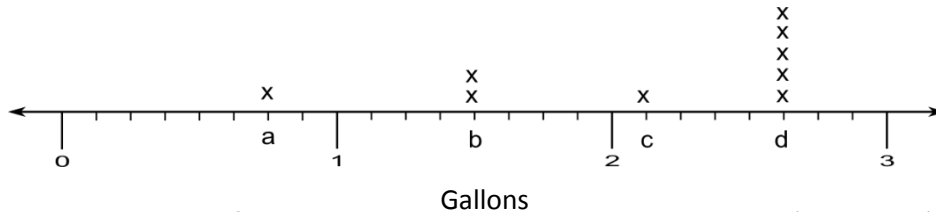
5th Math, Unit1 (3 weeks)

Whole Number Place Value & Operations; Volume

Unit 1: Instructional Strategies and Background Knowledge for 5th Grade Math CCSS						
Students will build on their work from Fourth grade using various strategies based on place value to multiply and divide multi-digit whole numbers. Students will only be scored on four digits by one digit in first quarter. They will continue to use these different strategies (i.e. area model, base ten model, array, etc.) throughout the year to solidify their understanding until the standard algorithm is applied in the fourth quarter. Students will experience finding volume of rectangular prisms and understand concepts related to volume. Notation for finding volume will develop from these experiences.						
How are place value patterns repeated in numbers? How can place value help me multiply and divide? How do I solve real-world problems involving volume?						
Week 1	Monday	Tuesday	Wednesday	Thursday	Friday	
# Talks that push fluency	During # talks you will want to use the area model, rectangular arrays and base 10 models, # talks. You will also want to focus on the power of 10. You will want students to use the notation of finding volume 5.NBT.5 Use area model, rectangular arrays, and base 10 models 5.OA.1, 5.OA.2 Resource Guide for using Number Talks in Unit 1 Supplemental Number Talks for Unit 1 Number Talks Resources for 3rd-5th Grades					
Standards/MP	5.NBT1 (2,7), 5.NBT2 (2,7), 5.NBT5 (F), 5.OA1 (7), 5.OA2 (7)					
Goal and Task: *4-digit by 1-digit multiplication problems with multiples of 10 in each group. *Build order of operation through discussion and Minds on Math	I use my understanding of place value understanding to solve problems. I see patterns when I multiplying by multiples of 10.					
Lesson	(4 x 100) (25 X 100) (258 x 100)	(8 x 1000) (26 X 1000) (478 X 1000)	(36,000 x 10) (30,450 x 10) (14,560 X 100)	Foldable for exponents 100 x 100 1000 x 1000 10 ³ x 10 ³ 10 ² x 10 ⁴ 3 x 10 ³ ○ 4 x 10 ² 4 x 10 ⁴ ○ 7 x 10 ⁵	9 x 10 ³ 720 x 10 ⁴ 4025 x 10 ³ 10 ⁴ = 40000	
Fluency/ Assessment	5.NBT.5 Make the Largest Product Make the Smallest Product 5.NBT.2 Multiplying a Whole Number by a Power of 10 Dividing a Whole Number by a Power of 10 Assessment of learning					

Make or Locate Summative Assessments

1. Jill is collecting honey from 9 different beehives, and recorded the amount collected, in gallons, from each hive in the line plot shown:



She wants to write the value of each point marked on the number line above (Points a–d) in terms of the largest possible whole number of gallons, quarts, and pints. Use the line plot above to fill in the blanks with the correct conversions. (The first one is done for you.)

- a. 0 gal 3 qt 0 pt
- b. _____ gal _____ qt _____ pt
- c. _____ gal _____ qt _____ pt
- d. _____ gal _____ qt _____ pt

2. Shiloh wants to make 5 pitchers of tea. Each recipe calls for $\frac{1}{4}$ cup of sugar. If she makes 5 pitchers of tea will she have more or less than 1 whole cup of sugar? Explain your reasoning.
3. There are five bakeries. Each bakery bakes 728 trays of cookies in a day. How many trays of cookies can all the bakeries bake in 43 days? Explain your reasoning.

4. Mrs. Allen needs 600 square tiles to cover the family room floor. The tiles come in boxes of 8. How many boxes does Mrs. Allen need? Explain your reasoning.

5.

$$50 \div 2 + 8 - 3 = 2$$

Rewrite, using what you know about order of operations, to show how the problem was solved.

6.

- a. Alex and Chet both collect cards. Write an algebraic equation to show that Alex has twice as many cards as Chet. Let c represent the number of cards Chet has.
- b. If Chet has 8 cards, how many cards do they have altogether?

A Progression Toward Mastery

Assessment Task Item and Standards Assessed	STEP 1 Little evidence of reasoning without a correct answer. (1 Point)	STEP 2 Evidence of some reasoning without a correct answer. (2 Points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)
1 5.NF.3 5.NF.4 5.NF.6 5.NF.7 5.MD.1 5.MD.2	The student has two or fewer correct answers.	The student has three correct answers.	The student has five correct answers.	The student correctly answers all seven items: a. 1 gal, 2 qts 2 gal, 1 pt 2 gal, 2 qt, 1 pt b. 13 gal, 1 pt c. 2 1/9 gal d. 1 7/12 gal e. 1/12 gal f. 6 c g. 12 bottles
2 5.NF.4	The student is unable to find a solution and is unable to explain the reasoning used.	The student finds the solution, but is unable to clearly explain the reasoning used.	The student makes a calculation error in finding a solution, but is able to clearly explain the reasoning used.	The student is able to clearly explain that the product is greater than 1. For example, $5 \times \frac{1}{4} = 5/4 = 1 \frac{1}{4}$ or greater than 1.
3 5.NBT.5	The student is able to solve one part of the problem and is unable to clearly explain the reasoning used, or the student is unable to solve any part of the problem and is unable to clearly explain the reasoning used.	The student is able to solve one part of the problem and is able to clearly explain the reasoning used.	The student is able to solve both parts of the problem but is unable to clearly explain the reasoning used.	The student is able to efficiently solve both parts of the problem and is able to clearly explain the reasoning used.
4 5.NBT.6	The student is unable to solve the problem and is unable to explain the reasoning used.	The student is able to solve the problem, but is unable to clearly explain the reasoning used.	The student is unable to solve the problem but is able to clearly explain the reasoning used.	The student is able to efficiently solve the problem and is able to clearly explain the reasoning used.
5 5.OA.1	The student is unable to communicate understanding using parentheses, brackets, or braces in numerical expression.	The student uses parentheses, brackets, or braces in numerical expressions, and evaluates expressions with these symbols with significant errors.	The student uses parentheses, brackets, or braces in numerical expressions, and evaluates expressions with these symbols with minor errors.	The student uses parentheses, brackets, or braces in numerical expressions, and evaluates expressions with these symbols with no errors.
6 5.OA.2	The student uses incorrect reasoning for all parts of the task and makes errors in calculation.	The student uses incorrect reasoning for all parts of the task and uses correct calculations.	The student uses correct reasoning for all parts of the task, but makes errors in calculation.	The student uses both correct reasoning and correct calculations for all parts of the task.

Plan for Formative Assessment & Feedback

Things to Remember about Assessment and Feedback:

- Starts with a goal.
- Plan for feedback.

Items That Can Be Used for Formative Assessment:

- Scoring guides
- ECM Strategy Level Charts
- Classroom Work
- Fluency Interviews

Types of Feedback:

- Expert feedback (teacher given)
- Clarifying feedback from peers (discussion, pair-share, cooperative learning)
- Reflective feedback from self (self-scoring)
- Listening in feedback (discussion)

Plan for Daily Lessons