Plan for Grade 6 Unit 4: Dividing Fractions

Relevant Unit(s) to review: Grade 5 Unit 3: Multiplying and Dividing Fractions,
Grade 3 Unit 3: Wrapping Up Addition and Subtraction Within 1,000

Essential prior concepts to engage with this unit	• Understand division as an unknown-factor problem. • Understand and represent "How many groups?" and "How many in each group?" problems and understand division as an unknown factor problem. • Interpret division as a whole number
Brief narrative of approach	The unit's broad goal is for students to examine how the relative sizes of a numerator and denominator affect a quotient. Students use tape diagrams, equations, and expressions to represent situations involving partitive or quotitive interpretations of division with fractions before moving towards an algorithm for fraction division. The final lesson of the unit is recommended to be skipped given time constraints for other units which may need more intentional support and to accommodate additional tasks from Grade 5. Specifically, students may need more work interpreting whole number quotients and two types of division: "how many groups" (measurement division) and "how many in each group" (partitive division) . Tasks in Lessons 13–16 use division in the context of volume and area. Use these lessons if additional support for these geometric topics or if the additional more concrete examples would benefit students.

Lessons to Add	Lessons to Remove or Modify
1. Add Grade 5, Unit 3, Lesson 11: This lesson focuses on students determining the size of the piece when a unit fraction is divided into equally sized pieces. This supports students to be able to interpret a fraction divided into equal pieces and, in this context, and to connect multiplication with division. If the Check Your Readiness assessment shows that students need additional familiarity with interpreting division, consider also referring to Grade 3 Unit 3 where students interpret whole number division using grouping.	1. Remove 6.4.17: This lesson is an application of the concepts from the unit. It can be moved to outside of class. 2. Combine Lessons 6.4.12 and 6.4.13: Focus on the application of division to lengths of objects 3. Combine Lessons 6.4.14 and 6.4.15: Focus on the application of division to the volume of objects
Lessons added: 1	Lessons removed: 3

Modified Plan for Grade 6 Unit 4

Day	IM lesson	Notes
1	assessment	Check Your Readiness: Administer all items at least a couple of days before beginning instruction to gather data. Use the guidance provided with each problem to adjust instruction so that students can access the math in the unit. In particular, use questions 4, 5, and 6 to determine whether students need additional familiarity with understanding division. Use this information to decide whether to include the suggested lessons from Grade 5.
2	6.4.1	
3	6.4.2	If the Check Your Readiness assessment shows that students are familiar with interpreting division, consider moving more quickly through this lesson.

4	5.3.11	Dividing a unit fraction by a whole number.
5	6.4.3	
6	6.4.4	
7	6.4.5	
8	6.4.6	
9	Mid Unit Assessment	
10	6.4.7	
11	6.4.8	
12	6.4.9	
13	6.4.10	
14	6.4.11	
15	6.4.12 6.4.13	Consider combining these lessons: emphasize connecting division to finding length.
16	6.4.14 6.4.15	Consider combining these lessons: emphasize connecting division to finding volume.
17	6.4.16	
18	6.4 End Assessment	

Priority and Category List for Lessons

High priority (+), Medium priority (0), Low priority (-)

E: Explore, Play, and Discuss, D: Deep Dive, A: Synthesize and Apply

Lesson	Priority (+, 0, -)	Category (E, D, A)	Notes
6.4.1	_	E	This lesson focuses on exploring quotients of different sizes. The cool-down focuses on comparing values of 1.
6.4.2	0	E	This lesson focuses on exploring ways to think about division. The cool-down focuses on interpreting how to use multiplication algorithms in division.
6.4.3	0	D	This lesson focuses on division in context. The cool-down focuses on writing a division problem from a situation, then solving.
6.4.4	+	D	This lesson focuses on connecting concrete and pictorial representations and connecting them to division. The cool-down focuses on drawing patterns that represent division.
6.4.5	+	D	This lesson builds on Lesson 4 and connects concrete and visual representations of division with an equation. The cool-down focuses on matching an equation with a given situation.
6.4.6	+	D	This lesson focuses on the concept of how many groups. (measurement division) The cool-down focuses on how many groups by connecting to a multiplication algorithm.
6.4.7	+	D	This lesson focuses on the idea of “how many groups” when the number of groups is less than one. The cool-down focuses on this and uses a tape diagram.
6.4.8	+	D	This lesson focuses on using division problems to find the size of one group. (partitive) The cool-down focuses on showing the size of the group with an equation and a visual model.
6.4.9	+	D	This lesson focuses on finding one group in different situations. The cool-down provides students a diagram to help support demonstrating partitive division.

6.4.10	+	A	This lesson focuses on looking for patterns when dividing by a fraction. The cool-down focuses on finding a whole number divided by a fraction using both a diagram and a multiplication algorithm.
6.4.11	0	A	This lesson focuses on using an algorithm to divide fractions. The cool-down focuses on using an algorithm to solve a fraction divided by fraction problems.
6.4.12	0	D	This lesson focuses on solving fraction division problems involving length. The cool-down focuses on solving a fraction problem involving length in the context of a story problem.
6.4.13	0	D	This lesson focuses on exploring rectangles that have fractional measurements. The cool-down focuses on applying division by fractions to find the side length given area in a story problem.
6.4.14	-	A	This lesson focuses on exploring the area and volume where fractions are involved. The cool-down focuses on finding volume in cubic inches given fractional values.
6.4.15	-	D	This lesson focuses on solving volume problems that involve fractions. The cool-down focuses on finding a height given base and volume as well as problems with edge length to find the volume.
6.4.16	0	A	This lesson focuses on using fractional operations to solve word problems. The cool-down focuses on taking a problem in context, solving, and justifying one's reasoning.
6.4.17	-	A	This culminating activity is optional. In this task, students are given a scenario involving the Postal Service and flat-rate boxes. Students take what they have learned about fractions to find shipping costs.

Lesson 11: Divide Unit Fractions by Whole Numbers

- Let’s divide a unit fraction by a whole number.

Warm-up: Number Talk: Double the Divisor

Find the value of each expression mentally.

- $72 \div 4$
- $36 \div 4$
- $4 \div 4$
- $1 \div 4$

11.1: More Macaroni and Cheese

Jada and her 2 sisters equally share $\frac{1}{2}$ a pan of macaroni and cheese.

1. Draw a diagram to represent the situation.

2. Explain how this expression represents the situation: $\frac{1}{2} \div 3$

3. How much of the whole pan of macaroni and cheese will each person get?

11.2: More People Share

1. 4 people equally share $\frac{1}{2}$ a pan of macaroni and cheese.
   a. Draw a diagram to represent the situation.

   b. Explain how your diagram represents $\frac{1}{2} \div 4$.

   c. How much of the whole pan of macaroni and cheese did each person get? Be prepared to explain your reasoning.

2. 5 people equally share $\frac{1}{2}$ a pan of macaroni and cheese.

a. Draw a diagram to represent the situation.

b. Explain how your diagram represents $\frac{1}{2} \div 5$.

c. How much of the whole pan of macaroni and cheese did each person get? Be prepared to explain your reasoning.

3. How are the problems the same? How are they different?