

MA.5.FR.1.1

Overarching Standard: MA.5.FR.1 *Interpret a fraction as an answer to a division problem.*

Benchmark of Focus

MA.5.FR.1.1 Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction.

Example: At Shawn's birthday party, a two-gallon container of lemonade is shared equally among 20 friends. Each friend will have $\frac{2}{20}$ of a gallon of lemonade which is equivalent to one-tenth of a gallon which is a little more than 12 ounces.

Benchmark Clarifications:

Clarification 1: Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator.

Clarification 2: Within this benchmark, the expectation is not to simplify or use lowest terms.

Clarification 3: Fractions can include fractions greater than one.

Related Benchmark/Horizontal Alignment

- MA.5.NSO.2.2
- MA.5.AR.1.1
- MA.5.GR.3.3
- MA.5.DP.1.2

Vertical Alignment

Previous Benchmarks

- MA.4.NSO.2.4

Next Benchmarks

- MA.6.NSO.2.2

Purpose and Instructional Strategies

The purpose of this benchmark is for students to understand that a division expression can be written as a fraction by explaining their thinking when working with fractions in various contexts. This builds on the understanding developed in Grade 4 that remainders are fractions

(MA.4.NSO.2.4) and prepares students for the division of fractions in Grade 6 (MA.6.NSO.2.2).

- When students read $\frac{5}{8}$ as “five-eighths,” they should be taught that $\frac{5}{8}$ can also be interpreted as “5 divided by 8,” where 5 represents the numerator and 8 represents the denominator of the fraction ($\frac{5}{8} = 5 \div 8$) and refers to 5 wholes divided into 8 equal parts.
- Teachers can activate students’ prior knowledge of fractions as division by using fractions that represent whole numbers (e.g., $\frac{24}{6}$) Familiar division expressions help build students’ understanding of the relationship between fractions and division (MTR.5.1).
- During instruction, provide examples accompanied by area and number line models.
- During instruction for solving mathematical or real-world problems involving division of whole numbers and interpreting the quotient in the context of the problem, students will be able to represent the division of two whole numbers as a mixed number, where the remainder is the fractional part’s numerator and the size of a group is its denominator (for example, $17 \div 3$ equals $5\frac{2}{3}$ which is the number of size 3 groups you can make from 17 objects including the fractional group). Students should demonstrate their understanding by explaining or illustrating solutions using visual fraction models or equations.

Common Misconceptions or Errors

- Students can believe that the fraction bar represents subtraction in lieu of understanding that the fraction bar represents division.
- Students can have the misconception that division always result in a smaller number.
- Students can presume that dividends must always be greater than divisors and, thus, reorder when representing a division expression as a fraction. Show students examples of fractions with greater numerators and greater denominators to create a division equation.

Strategies to Support Tiered Instruction

- Instruction includes making the connection to models and tools previously used to understand division as equal groups or sharing, but now as a fraction in a real-world context.
 - For example, “Eight friends share four brownies” can be represented as $\frac{4}{8}$. This means that $4 \div 8$ can be represented using the model below. Four is divided into 8 equal parts, each part is $\frac{1}{2}$ of the brownie.



- Connecting the real-world application to the fraction will help students understand that the fraction really means division.

- Instruction includes making the connection to models and tools previously used to understand division as equal groups or sharing, but now as a fraction in a real-world context.
 - For example, “Marcos has 8 toy cars that he wants to put into 4 boxes equally. How many cars can go in each box?” $8 \div 4$ can be shown using a model of 8 wholes divided into 4 groups. The quotient would be the total number of pieces in each group. The model below would show that $8 \div 4 = 2$. This can also be expressed as $\frac{8}{4} = 2$.



- Instruction includes examples of fractions with greater numerators and greater denominators to create a division equation.

Questions to ask students:

How are division and fractions related?

- Sample answer that indicates understanding: Fractions and division are the same thing. Division is breaking things up into equal groups. The divisor tells us how many groups. In fractions the denominator tells us how many pieces we are breaking something up into.
- Sample answer that indicates an incomplete understanding or a misconception: Division and fractions are not similar. Fractions are less than a whole.

How can you divide a smaller number by a larger number?

- Sample answer that indicates understanding: If you divide a smaller number by a larger number your answer will be a fraction. The divisor will be the denominator and the dividend will be the numerator.
- Sample answer that indicates an incomplete understanding or a misconception: You cannot do that. You can only divide a larger number by a smaller number.

John has 2 candy bars and wants to share them equally among 5 people. How much will each person get?

- Sample answer that indicates understanding... *I draw a picture of 2 candy bars and break each one up into fifths since they are 5 people sharing the candy bars. Each person gets one-fifth of each candy bar for a total of two-fifths per person.*
- Sample answer that indicates an incomplete understanding or a misconception: *You cannot do that because you don't have enough candy bars for 5 people.*

Instructional Tasks

Instructional Task 1

Create a real-world division problem that results in an answer equivalent to $\frac{3}{10}$

Instructional Task 2

Write a mixed number that is equivalent to $10 \div 3$.

Instructional Task 3

Monica has a ribbon that is 8 feet long. She wants to make 12 bows for her friends. How long will each piece of the ribbon be? Express your answer in both feet and inches.

Instructional Task 4

Albert baked 18 fudge brownies for his video game club members. He wants to share the brownies with the 5 club members. How many brownies will each club member get?

Instructional Items

Instructional Item 1

Which expression is equivalent to $\frac{7}{12}$?

- a. $7 - 12$
- b. $7 \div 12$
- c. $12 - 7$
- d. $12 \div 7$

Instructional Item 2

Amanda has 12 pepperoni slices that need to be distributed equally among 5 mini pizzas. How many pepperoni slices will go on each mini pizza?

- a. $\frac{2}{5}$
 - b. $2\frac{2}{5}$
 - c. 7
 - d. 60
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Achievement Level Descriptors:

Benchmark		Context	Assessment Limits
<p>MA.5.FR.1.1 Given a mathematical or real-world problem, represent the division of two whole numbers as a fraction.</p> <p>Example: At Shawn's birthday party, a two-gallon container of lemonade is shared equally among 20 friends. Each friend will have $\frac{2}{20}$ of a gallon of lemonade which is equivalent to one-tenth of a gallon which is a little more than 12 ounces.</p> <p>Clarification 1: Instruction includes making a connection between fractions and division by understanding that fractions can also represent division of a numerator by a denominator.</p> <p>Clarification 2: Within this benchmark, the expectation is not to simplify or use lowest terms.</p> <p>Clarification 3: Fractions can include fractions greater than one</p>		Both	N/A
ALD 2	ALD 3	ALD 4	ALD 5
Recognizes that a fraction represents the division of the numerator by the denominator.	Given a mathematical problem, represents the division of two whole numbers as a fraction.	Given a mathematical or real-world problem, represents the division of two whole numbers as a fraction.	Given a mathematical or real-world problem, represents the division of two whole numbers as a fraction and identifies errors

Additional Resources:[CPALMS](#)[Khan Academy](#)**Resources/Tasks to Support Your Child at Home:**[Khan Academy Understand Fractions as Division](#)