

MA.4.FR.2.3

Overarching Standard: *MA.4.FR.2 Build a foundation of addition, subtraction and multiplication operations with fractions.*

Benchmark of Focus

MA.4.FR.2.3: Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions.

Examples: $\frac{9}{100} + \frac{3}{10}$ is equivalent to $\frac{9}{100} + \frac{30}{100}$, which is equivalent to $\frac{39}{100}$.

Benchmark Clarifications

Clarification 1: Instruction includes the use of visual models.

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

Related Benchmark/Horizontal Alignment

- MA.4.NSO.2.7
- MA.4.FR.1.1/1.2/1.3

Vertical Alignment

Previous Benchmarks

MA.3.FR.1.2

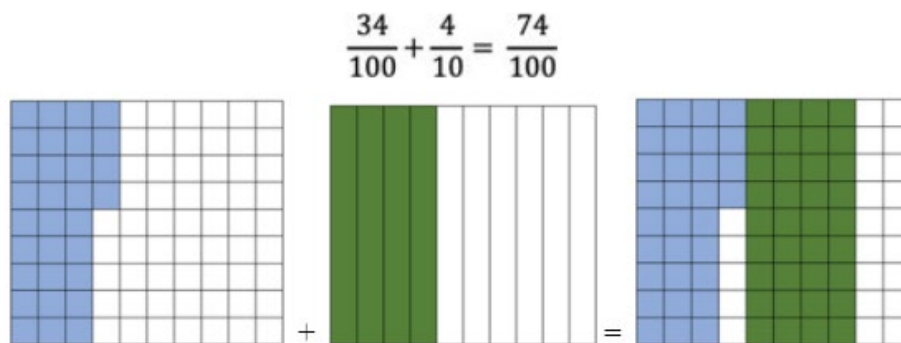
Next Benchmarks

MA.5.FR.2.1

Purpose and Instructional Strategies

The purpose of this benchmark is to connect fraction addition to decimal addition through decimal fractions. This will be the first opportunity for students to create common denominators to add fractions. This benchmark continues the work of equivalent fractions (MA.3.FR.1.2) by having students rename fractions with denominators of 10 as equivalent fractions with denominators of 100 (MA.4.FR.1.1). Students who can generate equivalent fractions can adapt this new procedure to develop strategies for adding fractions with unlike denominators in Grade 5 (MA.5.FR.2.1).

- Instruction may include students shading decimal grids (10 x10 grids) to support their understanding.



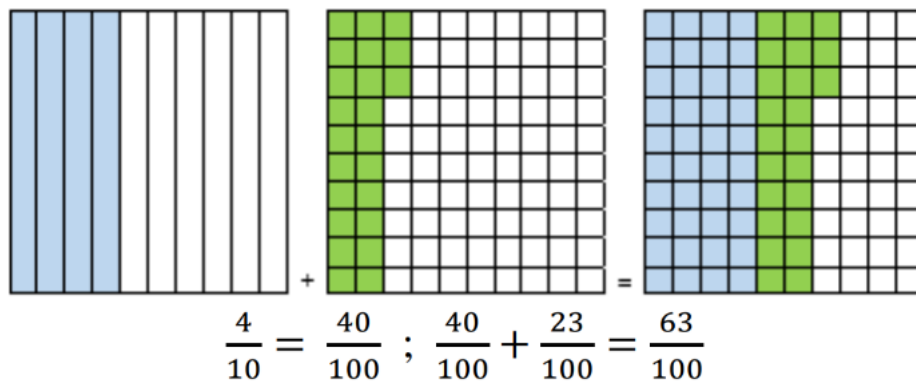
- Subtraction of decimal fractions is not a requirement of Grade 4.

Common Misconceptions or Errors

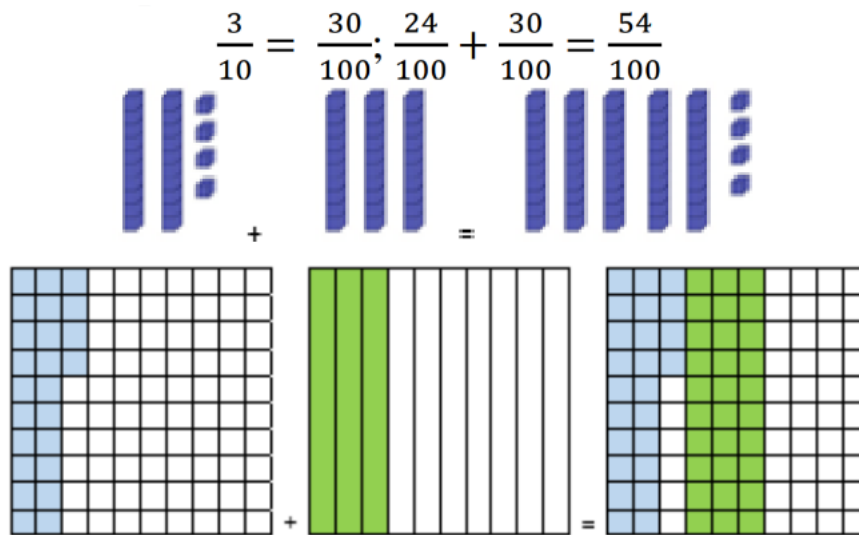
- Students often will add the numerators and the denominators without finding the like denominator. Students will need visual models to understand what the like denominator means.

Strategies to Support Tiered Instruction

- Instruction includes opportunities to explore the addition of a fraction with a denominator of 10 to a fraction with a denominator of 100 using visual models to help understand equivalent fractions. Students use visual models to make sense of equivalent fractions when finding like denominators. The teacher provides clarification that students must find the like denominator before adding.
 - For example, the teacher displays the problem $\frac{4}{10} + \frac{23}{100}$ and asks students to share what they notice about this expression. Students identify that the denominators are different. The teacher guides students to shade decimal grids to represent the problem and solve while supporting students as they use the visual models to understand that $\frac{4}{10}$ is equivalent to $\frac{40}{100}$. This is repeated with similar addition problems that have denominators of 10 and 100.

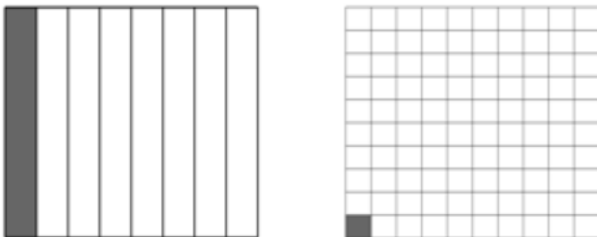


- For example, the teacher displays the problem $\frac{24}{100} + \frac{3}{10}$ asking students to share what they notice about this expression. Students identify that the denominators are different. The teacher guides students to use place value blocks and shaded decimal grids to represent the problem and solve, having tens rods represent tenths, and ones cubes represent hundredths. Students are supported as they use the visual models to understand that $\frac{3}{10}$ is equivalent to $\frac{30}{100}$. This is repeated with similar addition problems that have denominators of 10 and 100.



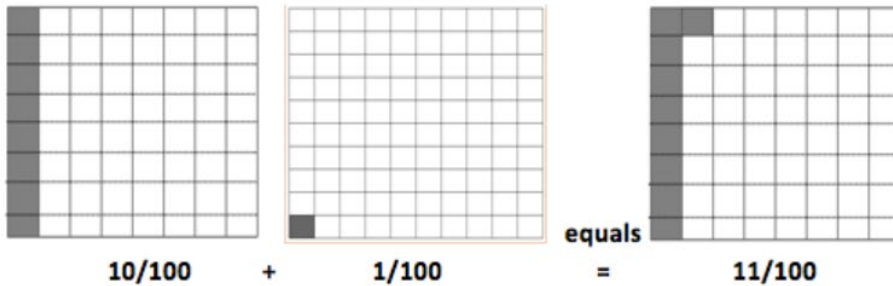
Questions to ask students:

- **Is $1/10$ equivalent to $1/100$? Use a model to prove your answer.**
- Sample answer that indicates understanding: *No, $1/10$ is greater than $1/100$. (model shown below)*



- **How do $1/10$ and $10/100$ compare?**
- Sample answer that indicates understanding: *$1/10$ is equivalent to $10/100$ because if I shade in $1/10$ of a whole and $10/100$ of a whole they cover the same amount of space.*

- **What if you combined the 1/10 and 1/100 what would be the new value?**
- Sample answer that indicates understanding: *Student demonstrates the understanding that 1/10 must be converted to hundredths then added. (model shown below)*



- Sample answer that indicates an incomplete understanding or a misconception: *Student does not convert tenths to hundredths, adds the values and find a sum 2/100 or 2/10.*

Instructional Tasks

Instructional Task 1

Determine the equivalent fraction. $\frac{5}{10} = \frac{\quad}{100}$

Use your thinking from above to help you add the following fractions:

$$\frac{31}{100} + \frac{5}{10} =$$

Instructional Items

Instructional Item 1

An expression is shown:

$$\frac{3}{10} + \frac{32}{100}$$

What is the value of the expression?

Achievement Level Descriptors:

Benchmark	Context	Assessment Limits
MA.4.FR.2.3 Explore the addition of a fraction with denominator of 10 to a fraction with denominator of 100 using equivalent fractions. Example: $\frac{9}{100} + \frac{3}{10}$ is equivalent to $\frac{9}{100} + \frac{30}{100}$ which is equivalent to $\frac{39}{100}$. Clarification 1: Instruction includes the use of visual models. Clarification 2: Within this benchmark, the expectation is not to simplify or use lowest terms.	Mathematical	Items may include fractions greater than one but may not use mixed numbers.

ALD 2	ALD 3	ALD 4	ALD 5
recognizes equivalent fractions with denominators of 10 and 100.	when given a number line or models, adds a fraction with a denominator of 10 to a fraction with denominator of 100 using equivalent fractions.	explores the addition of a fraction with a denominator of 10 to a fraction with a denominator of 100 using equivalent fractions.	adds a fraction with a denominator of 10 to a fraction with a denominator of 100 using equivalent fractions.

Additional Resources:

[CPALMS Resources](#)

Video: [Visually Converting tenths and hundredths](#)

Resources/Tasks to Support Your Child at Home:

Khan Academy: [Adding fractions with a denominator or 10 or 100](#)

Khan Academy: [Practice](#)

Using [decimal grid paper](#), have your child model addition problems with denominators of 10 and 100.

- Example:
- *Model $5/10 + 20/100 = 70/100$*
- *Model $5/10 + ? = 70/100$*