

## Understand Fraction Addition and Subtraction

### Standards

**4.NF.B.3** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Understand a fraction  $\frac{a}{b}$  with  $a > 1$  as a sum of fractions  $\frac{1}{b}$ .\*

- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:*

$$\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}; \frac{3}{8} = \frac{1}{8} + \frac{2}{8}; 2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}.$$

\* Tests two of four substandards.

### Prerequisite Standards

**3.NF.A.3a** Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

**3.NF.A.3b** Recognize and generate simple equivalent fractions, e.g.,  $\frac{1}{2} = \frac{2}{4}$ ,  $\frac{4}{6} = \frac{2}{3}$ . Explain why the fractions are equivalent, e.g., by using a visual fraction model.

**4.NF.A.1** Explain why a fraction  $\frac{a}{b}$  is equivalent to a fraction  $\frac{(n \times a)}{(n \times b)}$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

### Overview of Tested Skills

Problems on this assessment form require students to be able to recognize the relationship between a number line model, an area model, or a fraction strip model and an associated fraction addition or subtraction equation or a word problem involving fraction addition or subtraction. Students will also need to be familiar with adding and subtracting whole numbers within 20 in order to add and subtract numerators.

### Common Misconceptions and Errors

Misconceptions and errors may result if students don't understand the meaning of the numerator (how many of the equal parts are counted) and the denominator (how many equal parts in the whole).

Errors may also result if students:

- add or subtract denominators as well as numerators.
- interpret units on the number line incorrectly.
- count parts of a whole incorrectly.
- add or subtract whole numbers incorrectly.

## Ready & i-Ready Instructional Resources

Consider using the following resources and the Learning Games\*\* as additional instructional resources for students who have placed on or above level in Number and Operations and Algebra and Algebraic Thinking. See additional recommendations on page 2 for students performing below grade level.

### Beginning

#### Focus: Developing Underlying Concepts

Help students understand the relationship between fractions written with numbers and fractions shown visually with different models. Discuss adding on more of the same equal pieces or taking away some of the equal pieces, and counting the result. Then help students write equations or draw models to represent the situations.

#### Teacher-led Small Group

##### Toolbox: Ready Instruction

Grade 4, Lesson 15

- Understand Fraction Addition and Subtraction

##### i-Ready: Tools for Instruction

Number and Operations, Level 4

- Fractions as Sums

#### Toolbox: Interactive Tutorial

Grade 4, Lesson 15

- Understand Adding and Subtracting Fractions

#### Student-led Small Group

##### Toolbox: Center Activities

Grade 3, Lesson 15

- 3.28 ★ Identify Fractions on a Number Line

### Progressing

#### Focus: Practice and Building Confidence

Help students pay careful attention to the words and the numbers in each problem. Build confidence with independent practice with composing and decomposing fractions, and representing sums and differences of fractions with equations and visual models.

#### Independent

##### Toolbox: Ready Practice and Problem Solving

Grade 4, Lesson 15

Grade 4, Lesson 15

- Understand Fraction Addition and Subtraction

##### i-Ready: Instruction

Level D

- Understand Adding and Subtracting Fractions

\*\* Learning Games are included with i-Ready Instruction

## Ready & i-Ready Instructional Resources (continued)

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### **i-Ready Diagnostic**

*If any of your students are placing one or two grade levels below in Number and Operations and Algebra and Algebraic Thinking, please first consider using recommendations in the Diagnostic reports. The instructional resources below can then be used to provide additional small group and individualized support for students performing at these levels.*

### **One Grade Level Below**

Students may be having difficulty with the skills and concepts involving quantitative reasoning and may struggle with understanding fraction concepts. Challenges with fraction concepts often relate to not understanding how fractions written as numbers or shown as a model represent a part or multiple parts of a whole.

These students will benefit from additional instruction and practice with:

- using fractions to name parts of a whole.
- representing fractions on a number line.
- using a variety of fraction models.

#### **Teacher-led Small Group**

##### **Toolbox: Ready Instruction**

*Grade 3, Lesson 15*

- Understand Fractions on a Number Line

##### **i-Ready: Tools for Instruction**

*Number and Operations, Level 3*

- Fractions on a Number Line

#### **Student-led Small Group**

##### **Toolbox: Center Activities**

*Grade 3, Lesson 15*

- 3.28 ★ ★ Identify Fractions on a Number Line

#### **Independent**

##### **Toolbox: Ready Practice and Problem Solving**

*Grade 3, Lesson 15*

- Understand Fractions on a Number Line

### **Two Grade Levels Below**

Students may be having difficulty with skills and concepts involving quantitative reasoning and may struggle with understanding fraction concepts. Challenges with fraction concepts often relate to not understanding that fractions represent equal shares of a whole. Math terms related to the essential concept at this level include *half* and *fourth*. Students are also likely to need to develop fluency with basic addition and subtraction facts.

These students will benefit from additional instruction and practice with:

- dividing shapes into equal-sized portions and naming the resulting pieces.
- daily review with basic addition and subtraction facts.

#### **Teacher-led Small Group**

##### **Toolbox: Ready Instruction**

*Grade 2, Lesson 28*

- Understand Breaking Shapes into Parts

##### **i-Ready: Tools for Instruction**

*Geometry, Level 2*

- Make Equal Shares

#### **Student-led Small Group**

##### **Toolbox: Center Activities**

*Grade 2, Lesson 28*

- 2.54 ★ ★ Draw Equal Shares

#### **Independent**

##### **Toolbox: Ready Practice and Problem Solving**

*Grade 2, End of Book Resource*

- Fluency Practice