

Fraction Fix

Teacher Guide | Lessons 26-30

Meaning first. Efficient procedures from understanding. Durable fluency through retrieval.

Lesson progression

26 **There Is Always Another Fraction**

27 **Joining Like Units**

28 **Why Common Denominators**

29 **Building Efficient Common Denominators**

30 **Adding Unlike Fractions**

Use each guide page to protect the conceptual throughline, anticipate misconceptions, and collect exit evidence.

Lesson 26 | There Is Always Another Fraction

Teacher Guide

Instructional focus

Understand density by generating fractions between two given fractions.

Primary representation: Number line and equivalence

Suggested 50-minute arc

5 min	Cumulative retrieval and estimate
8 min	Launch the central comparison or context
12 min	Student modeling and partner reasoning
10 min	Connect representation, language, and notation
10 min	Focused practice with immediate feedback
5 min	Exit evidence: computation plus explanation

Facilitation notes

- Ask students to estimate or predict before applying a procedure.
- Require the referent whole and the fractional unit to remain explicit.
- Use the listed misconception as evidence about the student's current model.
- Protect the central idea: Fractions do not have unique successors.

Answer key and look-fors

1. $\frac{4}{10}$ and $\frac{6}{10}$. 2. Answers vary.
5. Examples: $\frac{31}{40}$ and $\frac{63}{80}$. 6. Examples: $\frac{15}{16}$.
7. Examples: $\frac{17}{12}$. 8. The average is greater than the smaller and less than the larger.
- Error: $\frac{5}{8} = \frac{10}{16}$ and $\frac{6}{8} = \frac{12}{16}$, so $\frac{11}{16}$ lies between.
- Exit: examples include $\frac{31}{40}$ and $\frac{63}{80}$.

MISCONCEPTION TO WATCH

Fractions do not have unique successors.

EVIDENCE TO COLLECT

A correct result, a reasonable magnitude check, and an explanation that connects the representation to the symbols.

Instructional focus

Add and subtract fractions with like denominators as counts of a common unit.

Primary representation: Number line and strips

Suggested 50-minute arc

5 min	Cumulative retrieval and estimate
8 min	Launch the central comparison or context
12 min	Student modeling and partner reasoning
10 min	Connect representation, language, and notation
10 min	Focused practice with immediate feedback
5 min	Exit evidence: computation plus explanation

Facilitation notes

- Ask students to estimate or predict before applying a procedure.
- Require the referent whole and the fractional unit to remain explicit.
- Use the listed misconception as evidence about the student's current model.
- Protect the central idea: The denominator names the unit and is not added.

Answer key and look-fors

1. Five eighths. 2. $9/7$ lies between 1 and 2.
5. $7/12 + 8/12 = 15/12 = 1 \frac{1}{4}$. 6. $19/10 - 6/10 = 13/10$.
7. Missing addend is $9/9$. 8. Completed $12/8 = 1 \frac{1}{2}$ miles.
Error: the unit remains sevenths; the sum is $5/7$.
Exit: seven copies of $1/8$; $7/8$ is less than 1.

MISCONCEPTION TO WATCH

The denominator names the unit and is not added.

EVIDENCE TO COLLECT

A correct result, a reasonable magnitude check, and an explanation that connects the representation to the symbols.

Lesson 28 | Why Common Denominators

Teacher Guide

Instructional focus

Explain why unlike units must be renamed before addition or subtraction.

Primary representation: Fraction strips and number line

Suggested 50-minute arc

5 min	Cumulative retrieval and estimate
8 min	Launch the central comparison or context
12 min	Student modeling and partner reasoning
10 min	Connect representation, language, and notation
10 min	Focused practice with immediate feedback
5 min	Exit evidence: computation plus explanation

Facilitation notes

- Ask students to estimate or predict before applying a procedure.
- Require the referent whole and the fractional unit to remain explicit.
- Use the listed misconception as evidence about the student's current model.
- Protect the central idea: Common denominators are about common units, not a ritual.

Answer key and look-fors

1. $\frac{3}{6}$ and $\frac{2}{6}$. 2. $\frac{5}{6}$, below 1.
5. $\frac{1}{4} + \frac{1}{6} = \frac{5}{12}$. 6. $\frac{3}{5} + \frac{1}{2} = \frac{11}{10}$.
7. Thirds and fourths are different units. 8. 40 or 80; 40 is least.
Error: $\frac{2}{5}$ is below $\frac{1}{2}$ even though a positive amount was added; correct sum $\frac{5}{6}$.
Exit: $\frac{5}{6}$ using sixths.

MISCONCEPTION TO WATCH

Common denominators are about common units, not a ritual.

EVIDENCE TO COLLECT

A correct result, a reasonable magnitude check, and an explanation that connects the representation to the symbols.

Lesson 29 | Building Efficient Common Denominators

Teacher Guide

Instructional focus

Find useful common denominators using multiples and factor relationships.

Primary representation: Multiple lists and factor structure

Suggested 50-minute arc

5 min	Cumulative retrieval and estimate
8 min	Launch the central comparison or context
12 min	Student modeling and partner reasoning
10 min	Connect representation, language, and notation
10 min	Focused practice with immediate feedback
5 min	Exit evidence: computation plus explanation

Facilitation notes

- Ask students to estimate or predict before applying a procedure.
- Require the referent whole and the fractional unit to remain explicit.
- Use the listed misconception as evidence about the student's current model.
- Protect the central idea: The product works but is not always efficient.

Answer key and look-fors

1. 8,16,24,32,40. 2. $\text{LCM}(6,9)=18$.
5. $\text{LCM}(12,8)=24$. 6. $\text{LCM}(5,20)=20$.
7. $\text{LCM}(4,9)=36$, so it is actually least and efficient. 8. $5/12=10/24$; $1/8=3/24$.
Error: $\text{LCM}(12,18)=36$, not 144.
Exit: 24; $10/24$ and $3/24$.

MISCONCEPTION TO WATCH

The product works but is not always efficient.

EVIDENCE TO COLLECT

A correct result, a reasonable magnitude check, and an explanation that connects the representation to the symbols.

Lesson 30 | Adding Unlike Fractions

Teacher Guide

Instructional focus

Estimate, rename, add, and simplify fractions with unlike denominators.

Primary representation: Strips to equations

Suggested 50-minute arc

5 min	Cumulative retrieval and estimate
8 min	Launch the central comparison or context
12 min	Student modeling and partner reasoning
10 min	Connect representation, language, and notation
10 min	Focused practice with immediate feedback
5 min	Exit evidence: computation plus explanation

Facilitation notes

- Ask students to estimate or predict before applying a procedure.
- Require the referent whole and the fractional unit to remain explicit.
- Use the listed misconception as evidence about the student's current model.
- Protect the central idea: Renaming must preserve each addend's value.

Answer key and look-fors

1. About 1. 2. LCM=60.
5. $5/6 + 3/10 = 17/15 = 1 \frac{2}{15}$. 6. $7/8 + 11/12 = 43/24 = 1 \frac{19}{24}$.
7. $2/9 + 5/6 = 19/18 = 1 \frac{1}{18}$. 8. $17/12 = 1 \frac{5}{12}$ cups.
Error: $3/5 = 6/10$, not $9/10$; sum with $1/2$ is $11/10$.
Exit: $67/60 = 1 \frac{7}{60}$, just above 1.

MISCONCEPTION TO WATCH

Renaming must preserve each addend's value.

EVIDENCE TO COLLECT

A correct result, a reasonable magnitude check, and an explanation that connects the representation to the symbols.