

Fraction Fix

Teacher Guide | Lessons 46-50

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

Lesson progression

- 46 Choosing the Useful Form
- 47 Fractions as Ratios
- 48 Unit Rates and Double Number Lines
- 49 Proportions Without Blind Cross Multiplication
- 50 Signed Fraction Magnitude

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

Lesson 46 | Choosing the Useful Form

Teacher Guide

Instructional focus

Select fraction, decimal, or percent notation strategically.

Primary representation: Multiple representations

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: Conversion is a tool, not always a required first step.

Answer key and look-fors

1. 0.625 and 62.5%. 2. 0.75 dollar.

5. $\frac{7}{12}$ is about 0.5833, so it exceeds 0.58. 6. 6.

7. $\frac{1}{3}$. 8. $\frac{3}{20}$ or 15%, depending purpose.

Error: $\frac{2}{7}$ is approximately 0.285714; rounding can reverse close comparisons.

Exit: percent form; $62.5\% > 61\%$.

MISCONCEPTION TO WATCH

Conversion is a tool, not always a required first step.

EVIDENCE TO COLLECT

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

Instructional focus

Distinguish part-whole fractions from ratios while connecting both to division.

Primary representation: Tape diagrams and ratio tables

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 same two numbers can describe different relationships.

Answer key and look-fors

1. Eight. 2. $\frac{3}{8}$.

5. 4:7. 6. $\frac{7}{11}$.

7. $\frac{2}{5}$ compares concentrate to water; $\frac{2}{7}$ is concentrate as part of total. 8. Ratios can be interpreted as quotients.

Error: $\frac{3}{5}$ is red-to-blue, not red-to-total.

Exit: 3:5 red to blue, $\frac{3}{8}$ red of total, $\frac{5}{8}$ blue of total.

MISCONCEPTION TO WATCH

The same two numbers can describe different relationships.

EVIDENCE TO COLLECT

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

Lesson 48 | Unit Rates and Double Number Lines

Teacher Guide

Instructional focus

Use division to find a per-one rate and scale it multiplicatively.

Primary representation: Ratio table and double 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: A unit rate must include units and meaning.

Answer key and look-fors

1. \$4/item. 2. 3 mph.
5. \$3/lb. 6. 2 1/2 cups/batch.
7. 8 mph > 7 1/2 mph. 8. Labels identify what is "per one."
Error: distance divided by time gives 5 mph.
Exit: 5 miles per hour.

MISCONCEPTION TO WATCH

A unit rate must include units and meaning.

EVIDENCE TO COLLECT

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

Lesson 49 | Proportions Without Blind Cross Multiplication Teacher Guide

Instructional focus

Solve proportional problems through scale factors, unit rates, and equivalence.

Primary representation: Tables, double number lines, and 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: Cross-products verify equivalent ratios; they are not the definition of proportion.

Answer key and look-fors

1. 12. 2. $\frac{3}{2}$.

5. $x=20$. 6. $x=6.25$.

7. $1\frac{1}{4}$ cups. 8. Yes; both equal $\frac{2}{3}$.

Error: $x=12$; the scale factor from 5 to 20 is 4.

Exit: $x=9$; multiply numerator and denominator of $\frac{6}{10}$ by $\frac{3}{2}$.

MISCONCEPTION TO WATCH

Cross-products verify equivalent ratios; they are not the definition of proportion.

EVIDENCE TO COLLECT

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

Instructional focus

Locate, order, and interpret positive and negative fractions.

Primary representation: 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: A number with larger absolute value can be smaller when negative.

Answer key and look-fors

1. Symmetric about zero. 2. $\frac{3}{4} > \frac{2}{3}$.

5. $-\frac{5}{8} < -\frac{1}{4} < 0 < \frac{3}{10}$. 6. $-\frac{3}{5} < -\frac{7}{12}$.

7. $\frac{11}{8}$. 8. Answers include $-\frac{1}{4}$.

Error: $-\frac{7}{8}$ lies farther left, so it is smaller.

Exit: $-\frac{3}{4} < -\frac{2}{3} < \frac{1}{5}$.

MISCONCEPTION TO WATCH

A number with larger absolute value can be smaller when negative.

EVIDENCE TO COLLECT

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