

Add and Subtract Fractions

Unit 8 Overview: 9 lessons

Students see a fraction as a count of unit fractions ($\frac{3}{5}$ is $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$) and break fractions apart in more than one way. Then they add and subtract fractions with the same denominator: the parts are the same size, so only the numerators change. They rename mixed numbers and fractions greater than 1 both ways, add and subtract mixed numbers, trading 1 whole when the parts run over or run short, check answers with the benchmarks 0, one half and 1, and solve story problems with models and equations. Every problem keeps one denominator; adding fractions with unlike denominators is 5th grade work.

THE UNIT, DAY BY DAY

Day 1	Pre-Check	What students already know, before the first lesson.
Day 2	8.1 Sums of unit fractions	I can write a fraction as a sum of unit fractions.
Day 3	8.2 Break a fraction apart	I can break a fraction apart in more than one way.
Day 4	8.3 Add fractions	I can add fractions with like denominators.
Day 5	8.4 Subtract fractions	I can subtract fractions with like denominators.
Day 6	8.5 Mixed numbers and fractions greater than 1	I can rename mixed numbers and fractions greater than 1.
Day 7	8.6 Add mixed numbers	I can add mixed numbers.
Day 8	8.7 Subtract mixed numbers	I can subtract mixed numbers.
Day 9	8.8 Does the answer make sense?	I can use benchmarks to check an answer.
Day 10	8.9 Fraction story problems	I can solve story problems with fractions.
Day 11	Unit Review	The review, to go over together.
Day 12	Unit Test	Form A; Form B (other numbers) is for a retest.

GET READY FOR THE UNIT

- Paper strips all the same length, cut into halves, thirds, fourths, fifths, sixths, eighths, tenths and twelfths, several wholes of each for every pair
- Fraction number lines from 0 to 1 (the Graph Paper maker prints them) and lines from 0 to 5 in fourths, fifths and eighths
- Two colored pencils for every student, to color the parts of a fraction
- Whiteboards and markers
- Story cards with lengths, weights and amounts in fractions

HOW EACH LESSON GOES

- 1. Warm up** (5 min)
 - 2. Teach** (10 min)
 - 3. Try it together** (10 min)
 - 4. Practice** (15 min)
 - 5. Exit ticket** (5 min): a quick check on the lesson.
- Each lesson page ends with the Animal Math sheets, makers, tools and quizzes for it. “Sheet 3” is the third worksheet of a pack; a color pack prints each sheet again in black and white.

CHECKING AS YOU GO

PRINTABLE	Pre-Check: Day 1, with a key	EXIT TICKET	Exit Tickets: one a lesson, four to a page
PRINTABLE	Unit Review: the day before the test	PRINTABLE	Unit Test: Forms A and B, with keys



Add and Subtract Fractions

Lesson 8.1: Sums of unit fractions

GOAL Students see a fraction as a count of unit fractions: the denominator names the part, the numerator counts the parts, so $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$. They write fractions as sums and sums as fractions, past 1 too.

About 45 minutes

I can write a fraction as a sum of unit fractions.

THE LESSON

- 1 Warm up** (5 min) Students fold a strip into fifths and shade one part. What is it called? ($\frac{1}{5}$, a unit fraction.) How many of them make the whole strip?
- 2 Teach** (10 min) Shade 3 fifths of a strip one part at a time, saying “one fifth, two fifths, three fifths”. Write $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$. Then past 1: lay out five paper fourths, $\frac{5}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$. The first four make 1 whole, and one more fourth goes on a second strip.
- 3 Say:** “A unit fraction is one part. Every fraction is a count of unit fractions: $\frac{3}{5}$ is 3 of the $\frac{1}{5}$ parts.”
- 3 Try it together** (10 min) Pairs build $\frac{5}{8}$ and $\frac{7}{10}$ with paper unit fractions and write each as a sum. Then the class writes $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$ as one fraction and checks it with pieces.
- 4 Practice** (15 min) Students write each fraction as a sum of unit fractions on sheet 1 of Decomposing Fractions.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.1** and circle a face beside the “I can” line. Question 1: $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$; $\frac{1}{4}$ four times means the numerator was taken for the unit. Question 2: $\frac{4}{3}$; $\frac{4}{12}$ means the denominators were added too.

Ready for more? Write $\frac{11}{8}$ as a sum of unit fractions, then as 1 whole plus a fraction.

GET READY

- Paper strips cut into unit fractions
- Colored pencils

WORDS TO USE

unit fraction: one equal part of a whole, like $\frac{1}{5}$

sum: the answer when we add

ASK

- What is the unit fraction here?
- How many of them make the fraction?
- How many fifths make 1 whole?

WATCH FOR

Uses the numerator as the unit ($\frac{3}{5} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$). The bottom number names the parts: fifths, so $\frac{1}{5}$.

Adds the denominators ($\frac{1}{5} + \frac{1}{5} = \frac{2}{10}$). Shade it: two fifths are still fifths.

Stops at 1 whole for a fraction past 1. Use a second strip and keep counting the parts.

Need help? Lay paper unit fractions down one at a time while counting them out loud.

ON ANIMAL MATH

PRINTABLE

Decomposing Fractions: sheet 1

QUIZ

Fraction Operations Quiz: the Add and Subtract level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.1

Add and Subtract Fractions

Lesson 8.2: Break a fraction apart

GOAL Students break a fraction into a sum of fractions with the same denominator in more than one way, show each way with a model and an equation, and find a missing part.

About 45 minutes

I can break a fraction apart in more than one way.

THE LESSON

- 1 Warm up** (5 min) How many ways can you make 6 by adding two whole numbers? ($1 + 5$, $2 + 4$, $3 + 3$.)
- 2 Teach** (10 min) Shade $6/10$ of a strip. Color the first 2 tenths red and the other 4 blue: $6/10 = 2/10 + 4/10$. Color it again: $6/10 = 3/10 + 3/10$. And with three parts: $6/10 = 1/10 + 2/10 + 3/10$. The parts change, but they always add back to $6/10$, and they are all tenths.
Say: "I can break a fraction into parts in many ways. Every way adds back to the same fraction, and every part keeps the same denominator."
- 3 Try it together** (10 min) Pairs find every way to break $5/12$ into two parts, coloring a strip for each, and count the ways. Then they find the missing part: $11/12 = 4/12 + ?/12$.
- 4 Practice** (15 min) Students write the two parts shown in each bar on sheet 2 of Decomposing Fractions, then find every way to break a fraction apart and solve the stories on sheet 5.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.2** and circle a face beside the "I can" line. Question 1: any two different ways that add to $5/10$, such as $1/10 + 4/10$ and $2/10 + 3/10$; the same parts turned around are not a new way. Question 2: $7/10$; $11/10$ means the two numbers were added.

Ready for more? Break $9/8$ into 1 whole and the rest, then into three parts in two different ways.

GET READY

- Paper strips
- Two colored pencils for each student

WORDS TO USE

break apart: write a fraction as a sum of smaller parts

part: one of the numbers that add up to the whole amount

ASK

- Is there another way?
- How do you know your parts add up to the fraction?
- How many ways are there with two parts?

WATCH FOR

Writes parts that add to a different amount. Add the numerators to check.

Changes the denominator of a part ($5/6 = 2/3 + 3/3$). The parts are still sixths.

Gives the same way twice, turned around. A turn around is the same two parts.

Need help? Color a strip in two colors and write the parts straight from the colors.

ON ANIMAL MATH

PRINTABLE

Decomposing Fractions: sheets 2 and 5

QUIZ

Fraction Operations Quiz: the Add and Subtract level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.2

Add and Subtract Fractions

Lesson 8.3: Add fractions

GOAL Students add fractions with the same denominator as joining parts of the same whole: they add the numerators and keep the denominator, because the parts stay the same size. Sums can be more than 1.

About 45 minutes

I can add fractions with like denominators.

THE LESSON

- 1 Warm up** (5 min) 3 apples + 2 apples? 3 tens + 2 tens? 3 fifths + 2 fifths? Students say the unit each time.
- 2 Teach** (10 min) Shade $\frac{2}{8}$ of a strip, then $\frac{3}{8}$ more right after it: 5 eighths in all, $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$. Add the numerators: they count the parts. Keep the denominator: it names the parts, and adding does not change their size. Then past 1: $\frac{5}{6} + \frac{4}{6} = \frac{9}{6}$, one whole strip and 3 sixths more.
Say: "When the denominators are the same, the parts are the same size. I add the numerators to count the parts and keep the denominator."
- 3 Try it together** (10 min) Pairs add with strips: $\frac{1}{4} + \frac{2}{4}$, $\frac{3}{12} + \frac{5}{12}$ and $\frac{2}{3} + \frac{2}{3}$. Then the class answers Max, who says $\frac{1}{4} + \frac{2}{4} = \frac{3}{8}$. Is $\frac{3}{8}$ more or less than $\frac{2}{4}$ alone?
- 4 Practice** (15 min) Students shade strips and add on sheet 1 of Adding and Subtracting Fractions, then shade to put parts together on sheet 3 of Decomposing Fractions.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.3** and circle a face beside the "I can" line. Question 1: $\frac{1}{8} + \frac{6}{8} = \frac{7}{8}$; $\frac{7}{16}$ means the denominators were added. Question 2: $\frac{9}{10}$ and $\frac{11}{12}$.

Ready for more? Find every pair of fractions in twelfths that adds to 1.

GET READY

- Paper strips
- Whiteboards

WORDS TO USE

like denominators: the same bottom number, so the parts are the same size

add the numerators: count all the parts

ASK

- What size are the parts?
- Why does the denominator stay the same?
- Is the sum more or less than 1?

WATCH FOR

Adds the denominators ($\frac{2}{8} + \frac{3}{8} = \frac{5}{16}$). Shade it: the parts are still eighths.

Thinks a sum cannot be more than 1. Use a second strip for the parts past 1.

Need help? Lay paper parts end to end on a whole strip and count them.

ON ANIMAL MATH

PRINTABLE

Adding and Subtracting Fractions: sheet 1

PRINTABLE

Decomposing Fractions: sheet 3

QUIZ

Fraction Operations Quiz: the Add and Subtract level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.3

Add and Subtract Fractions

Lesson 8.4: Subtract fractions

GOAL Students subtract fractions with the same denominator as taking away parts of the same whole, with jumps back on a number line, and take a fraction from 1 by writing 1 with the same parts.

About 45 minutes

I can subtract fractions with like denominators.

THE LESSON

- 1 Warm up** (5 min) Count back by fifths together from $5/5$ to 0, pointing on a number line.
- 2 Teach** (10 min) On a number line in tenths, start at $9/10$ and jump back 2 tenths: $7/10$. So $9/10 - 2/10 = 7/10$. Subtract the numerators, keep the denominator. Then $1 - 5/12$: write 1 as $12/12$, so $12/12 - 5/12 = 7/12$. Check by adding: $7/12 + 5/12 = 12/12$.
Say: "I take away parts that are the same size, so I subtract the numerators and keep the denominator. To take a fraction from 1, I write 1 with the same parts."
- 3 Try it together** (10 min) Pairs subtract with jumps and with strips: $7/8 - 2/8$, $11/12 - 4/12$, then $1 - 3/4$ by writing 1 as $4/4$. Each answer is checked by adding.
- 4 Practice** (15 min) Students start at the dot and jump back on the number lines of sheet 2 of Adding and Subtracting Fractions, then subtract on the rest of the sheet, writing 1 and 2 as fractions first in the last row.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.4** and circle a face beside the "I can" line. Question 1: $6/8 - 3/8 = 3/8$; $9/8$ means the jump was added. Question 2: $1/8$; $6/8$ or $7/8$ means 1 was not written as $8/8$ first.

Ready for more? Write three subtractions in twelfths whose answer is $5/12$, one of them from 1.

GET READY

- Fraction number lines from 0 to 1
- Paper strips

WORDS TO USE

difference: the answer when we subtract

jump back: move left on the number line

1 whole: all the parts: $12/12$ is 1

ASK

- Where do you start? Which way do you jump?
- How many eighths make 1 whole?
- How can adding check your answer?

WATCH FOR

Subtracts the denominators too

($9/10 - 2/10 = 7/0$). Ask what size the parts left are.

Takes the numerator from 1 ($1 - 5/12 = 4/12$).

Write 1 as $12/12$ first.

Counts the marks, not the jumps. Count the spaces jumped over.

Need help? Shade the start on a strip, then cross out the parts taken away.

ON ANIMAL MATH

PRINTABLE

Adding and Subtracting Fractions: sheet 2

MAKER

Graph Paper: Paper Type Number Lines, Number Lines "Fractions, 0 to 1"

QUIZ

Fraction Operations Quiz: the Add and Subtract level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.4

Add and Subtract Fractions

Lesson 8.5: Mixed numbers and fractions greater than 1

GOAL Students rename a fraction greater than 1 as a mixed number by making wholes from its parts, and a mixed number as a fraction by counting the parts in its wholes and adding the rest.

About 45 minutes

I can rename mixed numbers and fractions greater than 1.

THE LESSON

- 1 Warm up** (5 min) How many thirds make 1 whole? 2 wholes? 3 wholes? (3, 6, 9.)
- 2 Teach** (10 min) Lay out 10 paper thirds. Put 3 together: 1 whole. Then 2 wholes, then 3, and 1 third is left: $10/3 = 3 \frac{1}{3}$. Without pieces: $17/8$ is two groups of 8 eighths and 1 left, so $2 \frac{1}{8}$. Then go back: $4 \frac{1}{6}$ is 4 wholes of 6 sixths, $24/6$, and 1 more sixth: $25/6$.
Say: "To rename a fraction, I make as many wholes as I can and keep the parts left over. To rename a mixed number, I count the parts in the wholes and add the rest."
- 3 Try it together** (10 min) Pairs rename with paper pieces: $9/2$ and $2 \frac{3}{8}$. Then without pieces: $23/12$ and $2 \frac{7}{10}$, checking each on a number line.
- 4 Practice** (15 min) Students write shaded amounts both ways on sheets 1-2 of Mixed Numbers and Improper Fractions and match fractions to mixed numbers on sheet 5, then break fractions into 1 whole and the rest on sheet 4 of Decomposing Fractions. Sheet 1 of Adding and Subtracting Mixed Numbers is a second day with strips.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.5** and circle a face beside the "I can" line. Question 1: $7/6 = 1 \frac{1}{6}$; $1/6$ alone means the full bar was not counted. Question 2: $3 \frac{1}{5}$ and $17/10$; $8/10$ means the whole was counted as 1 tenth.

Need help? Group paper pieces into wholes before writing either form.

Ready for more? Write three mixed numbers between 2 and 3 in eighths, then write each as a fraction.

GET READY

- Paper unit fractions, several wholes of each
- Number lines from 0 to 5 in thirds and eighths

WORDS TO USE

mixed number: a whole number and a fraction, like $3 \frac{1}{3}$

fraction greater than 1: more parts than make 1 whole, like $10/3$

rename: write the same amount another way

ASK

- How many parts make 1 whole?
- How many wholes can you make? How many parts are left?
- How can you check your mixed number?

WATCH FOR

Adds the whole number to the numerator ($1 \frac{2}{5} = 3/5$). One whole is 5 fifths: lay out a full strip.

Puts the parts left over the number of wholes ($17/8 = 2 \frac{1}{2}$). The parts are still eighths; the denominator stays.

Stops after 1 whole. Keep making wholes until fewer parts than a whole are left.

ON ANIMAL MATH

PRINTABLE

Mixed Numbers and Improper Fractions: sheets 1, 2 and 5

PRINTABLE

Decomposing Fractions: sheet 4

PRINTABLE

Adding and Subtracting Mixed Numbers: sheet 1

QUIZ

Fraction Operations Quiz: the Mixed Numbers level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.5

Add and Subtract Fractions

Lesson 8.6: Add mixed numbers

GOAL Students add mixed numbers with like denominators by adding the wholes and the parts, and trade the parts for 1 whole when they make 1 or more. They check by renaming both as fractions.

About 45 minutes

I can add mixed numbers.

THE LESSON

- 1 Warm up** (5 min) Add $2 + 3$. Then $1/6 + 4/6$. Then put the two answers together. What mixed number is it? ($5\frac{5}{6}$.)
- 2 Teach** (10 min) Add $2\frac{1}{6} + 3\frac{4}{6}$: the wholes make 5, the parts $5/6$, so $5\frac{5}{6}$. Then $1\frac{5}{8} + 2\frac{6}{8}$: the wholes make 3, the parts $11/8$. That is 8 eighths and 3 more, so trade $8/8$ for 1 whole: $3 + 1\frac{3}{8} = 4\frac{3}{8}$. Check another way: $13/8 + 22/8 = 35/8 = 4\frac{3}{8}$.
Say: "I add the wholes, then the parts. If the parts make 1 whole or more, I trade them for a whole."
- 3 Try it together** (10 min) Pairs add with paper pieces, then on paper: $3\frac{1}{10} + 2\frac{6}{10}$, $2\frac{3}{4} + 1\frac{2}{4}$ (a trade), and $4\frac{2}{5} + 3/5$, which makes a whole number.
- 4 Practice** (15 min) Students add by parts, with and without a trade, on sheet 2 of Adding and Subtracting Mixed Numbers, then add with jumps on sheet 4. Early finishers do the sums on sheet 3 of Adding and Subtracting Fractions.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.6** and circle a face beside the "I can" line. Question 1: $2\frac{3}{4}$ and $4\frac{1}{6}$; $3\frac{7}{6}$ means the parts were not traded for a whole. Question 2: $2; 1\frac{5}{5}$ is the same amount, so ask them to trade $5/5$ for 1.

Need help? Line up whole strips and parts on the desk, and swap a full set of parts for a whole strip.

Ready for more? Find two mixed numbers in fifths whose sum is exactly 6.

GET READY

- Paper strips, whole and cut into parts
- Number lines from 0 to 6 in fourths and eighths

WORDS TO USE

trade: swap a whole set of parts for 1 whole

add by parts: add the wholes, then the fractions

ASK

- Do the parts make more than 1 whole?
- How many eighths make a whole?
- About how big should the sum be?

WATCH FOR

Leaves too many parts in the answer ($3\frac{11}{8}$). Trade 8 eighths for 1 whole.

Trades but forgets to add the new whole ($3\frac{3}{8}$). Write the trade as its own step.

Adds the denominators. The parts are still eighths.

ON ANIMAL MATH

PRINTABLE

Adding and Subtracting Mixed Numbers: sheets 2 and 4

PRINTABLE

Adding and Subtracting Fractions: sheet 3 for early finishers

QUIZ

Fraction Operations Quiz: the Mixed Numbers level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.6

Add and Subtract Fractions

Lesson 8.7: Subtract mixed numbers

GOAL Students subtract mixed numbers with like denominators by parts. When the top fraction is too small, they trade 1 whole for parts first; a whole number is traded the same way.

About 45 minutes

I can subtract mixed numbers.

THE LESSON

- 1 Warm up** (5 min) Write 4 as 3 and some sixths. Write 5 as 4 and some tenths. ($3 \frac{6}{6}$, $4 \frac{10}{10}$.)
- 2 Teach** (10 min) Subtract $4 \frac{5}{6} - 1 \frac{4}{6}$: the parts give $\frac{1}{6}$ and the wholes 3, so $3 \frac{1}{6}$. Then $6 \frac{1}{3} - 2 \frac{2}{3}$: $\frac{1}{3}$ is too small to take $\frac{2}{3}$ from. Trade 1 whole for $\frac{3}{3}$: $6 \frac{1}{3} = 5 \frac{4}{3}$. Now $5 \frac{4}{3} - 2 \frac{2}{3} = 3 \frac{2}{3}$. A whole number works the same way: $5 - 1 \frac{3}{10} = 4 \frac{10}{10} - 1 \frac{3}{10} = 3 \frac{7}{10}$.
Say: "If the top fraction is too small, I trade 1 whole for parts of the same size. Then I subtract the parts and the wholes."
- 3 Try it together** (10 min) Pairs solve with paper strips, cutting a whole strip to trade: $4 \frac{3}{8} - 1 \frac{6}{8}$, then $3 - 1 \frac{5}{12}$. They check each answer by adding.
- 4 Practice** (15 min) Students subtract by parts, trading a whole where they need to, on sheet 3 of Adding and Subtracting Mixed Numbers, then jump back on sheet 4. Early finishers rename both numbers as fractions on sheet 3 of Adding and Subtracting Fractions.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.7** and circle a face beside the "I can" line. Question 1: $1 \frac{1}{3}$ and $3 \frac{3}{5}$; $2 \frac{2}{3}$ means 4 was not traded, and $4 \frac{2}{5}$ means the small fraction was taken from the big one. Question 2: $2 \frac{3}{8}$; $3 \frac{5}{8}$ means the parts were flipped.

Ready for more? Write a subtraction of mixed numbers in tenths that needs a trade and has $2 \frac{9}{10}$ as its answer.

GET READY

- Paper strips, whole and cut into parts
- Scissors for cutting a whole into parts

WORDS TO USE

trade 1 whole: swap 1 whole for parts: $1 = \frac{3}{3}$

subtract by parts: take away the fractions, then the wholes

ASK

- Is the top fraction big enough to take the other from?
- What does 1 whole look like in eighths?
- How can adding check your answer?

WATCH FOR

Flips the fractions ($6 \frac{1}{3} - 2 \frac{2}{3} = 4 \frac{1}{3}$). Ask: can you take 2 thirds from 1 third? Trade a whole first.

Trades but keeps the whole number the same. Cross it out and write one less.

Treats a whole number as having no parts ($5 - 1 \frac{3}{10} = 4 \frac{3}{10}$). Write 5 as $4 \frac{10}{10}$ first.

Need help? Model every problem with strips, cutting a whole strip into parts to trade.

ON ANIMAL MATH

PRINTABLE

Adding and Subtracting Mixed Numbers: sheets 3-4

PRINTABLE

Adding and Subtracting Fractions: sheet 3 for early finishers

QUIZ

Fraction Operations Quiz: the Mixed Numbers level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.7

Add and Subtract Fractions

Lesson 8.8: Does the answer make sense?

GOAL Students estimate a sum or difference with 0, one half and 1 to decide whether an answer makes sense, and write a sum in simplest form by dividing the top and bottom by the same number.

About 45 minutes

I can use benchmarks to check an answer.

THE LESSON

- 1 Warm up** (5 min) Is each fraction closest to 0, one half or 1? $4/10$, $1/12$, $7/8$. Students show on the number line.
- 2 Teach** (10 min) Jo says $5/8 + 6/8 = 11/16$. Estimate: $5/8$ is a bit more than one half, $6/8$ is three fourths, so the sum is more than 1. $11/16$ is less than 1, so it does not make sense: Jo added the denominators. Then simplest form: $1/8 + 5/8 = 6/8$, and 6 and 8 can both be divided by 2, so $6/8 = 3/4$.
Say: "Before I trust an answer, I estimate with 0, one half and 1. If the answer is far from my estimate, I check my work."
- 3 Try it together** (10 min) Pairs judge two answers, Yes or No, and fix the wrong one: $4/10 + 3/10 = 7/20$, and $11/12 - 2/12 = 9/12$. Then they write $9/12$ in simplest form.
- 4 Practice** (15 min) Students estimate, judge each answer and write sums in simplest form on sheet 4 of Adding and Subtracting Fractions, then round mixed numbers and check answers at the top of sheet 5 of Adding and Subtracting Mixed Numbers.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.8** and circle a face beside the "I can" line. Question 1: No, as $3/4 + 3/4$ is more than 1 and $6/8$ is less; Yes means the answer was not estimated. Question 2: $8/12$, then $2/3$; $4/6$ is equal but not simplest, so ask if 4 and 6 can still be divided.

Need help? Place each fraction on a number line with 0, one half and 1 marked before estimating.

Ready for more? Write a wrong answer to $7/8 + 5/8$ that an estimate would catch, and one it would not.

GET READY

- Fraction number lines with 0, one half and 1 marked
- Cards with answers to judge, some right and some wrong

WORDS TO USE

estimate: a close guess, made with numbers easy to use

benchmark: a number we know well: 0, one half, 1

simplest form: the fewest parts: no number divides both the top and bottom

ASK

- Is each fraction closer to 0, one half or 1?
- Should the answer be more or less than 1?
- Can the top and the bottom be divided by the same number?

WATCH FOR

Says Yes to an answer with added denominators. Estimate first: two fractions near $3/4$ make about $1 1/2$.

Stops simplifying too soon ($6/12 = 3/6$). Ask if both numbers can be divided again.

Divides the top and the bottom by different numbers. The same number, top and bottom.

ON ANIMAL MATH

PRINTABLE

Adding and Subtracting Fractions: sheet 4

PRINTABLE

Adding and Subtracting Mixed Numbers: sheet 5, the estimates at the top

QUIZ

Fraction Operations Quiz: the Add and Subtract level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.8

Add and Subtract Fractions

Lesson 8.9: Fraction story problems

GOAL Students solve story problems that join, take away and compare fractions and mixed numbers of the same whole: they draw a strip, number line or tape, write an equation with the unknown and answer with the unit.

About 45 minutes

I can solve story problems with fractions.

THE LESSON

- 1 Warm up** (5 min) Act it out: walk $\frac{2}{4}$ of the way across the room, then $\frac{1}{4}$ more. How far did you walk?
- 2 Teach** (10 min) Read: A ribbon is $2\frac{7}{8}$ yards long. Kai cuts off $\frac{12}{8}$ yards. How much is left? Draw a tape: the whole is $2\frac{7}{8}$, one part $\frac{12}{8}$, the other unknown. Write $2\frac{7}{8} - \frac{12}{8} = ?$ and subtract: $1\frac{5}{8}$ yards. Then a comparing story: Ana walked $\frac{7}{10}$ mile and Ben walked $\frac{4}{10}$ mile. How much farther did Ana walk?
 $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$ mile.
- Say:** "I read the story, draw what I know and write an equation with the unknown. Then I solve it and answer with the unit."
- 3 Try it together** (10 min) Pairs draw and solve: A jug has $1\frac{1}{4}$ liters of water, and Mia adds $\frac{2}{4}$ liter. How much is in the jug? Then: Leo has $4\frac{1}{3}$ cups of flour and uses $2\frac{2}{3}$ cups. How much is left?
- 4 Practice** (15 min) Students solve stories with strips, number lines and tape diagrams on sheets 1-3 of Fraction Word Problems, then the line plot and the stories on sheet 5 of Adding and Subtracting Fractions.
- 5 Exit ticket** (5 min) Students do **Exit Ticket 8.9** and circle a face beside the "I can" line. Question 1: $\frac{9}{10}$ mile; $\frac{9}{20}$ means the denominators were added. Question 2: $2\frac{3}{4}$ feet; $3\frac{1}{4}$ means the parts were flipped instead of trading a whole.

Ready for more? Write a two step story with $1\frac{1}{8}$, $2\frac{3}{8}$ and $\frac{5}{8}$, then solve it.

GET READY

- Story cards
- Whiteboards and paper strips
- A ruler or a measuring cup to act out a story

WORDS TO USE

equation: a number sentence with an equals sign

unknown: the number we need to find

tape diagram: a bar that shows the parts and the whole

ASK

- What do you know? What do you need to find?
- Does the story join, take away or compare?
- Does your answer make sense with the unit?

WATCH FOR

Adds when the story compares (how much farther). Draw both amounts as bars and find the gap.

Leaves off the unit. Read the question again: how far? The answer needs miles.

Need help? Act the story out or draw it on a tape before writing the equation.

ON ANIMAL MATH

PRINTABLE

Fraction Word Problems: sheets 1-3

PRINTABLE

Adding and Subtracting Fractions: sheet 5

QUIZ

Fraction Operations Quiz: the Mixed Numbers level

EXIT TICKET

4th Grade Adding and Subtracting Fractions Exit Tickets: Exit Ticket 8.9