Which Fraction Wins? Comparing Unlike Fractions

Teacher		**Class**	Grade 4
Subject	Math	**Topic**	Comparing fractions
Date		**Room**	
Lesson length	60 minutes	**Country**	United States

Students learn to compare fractions with different numerators and denominators fairly. They build same-size models, use common denominators and 1/2, and write > , < , or =.

Curriculum links

- Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole.
- Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.
- Solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators [1].

Learning objectives

- Students will compare two unlike fractions using same-size visual models fairly.
- Students will use common denominators and the 1/2 benchmark to compare fractions.
- Students will record comparisons with >, <, = and justify with drawings.

Success criteria

- I can compare fractions fairly only when wholes are the same size.
- I can rewrite fractions with same-size pieces or compare each to 1/2.
- I can write >, <, = correctly and explain with a model.

What students already know

Quick check (2 minutes): show same-size bars for 3/8 vs 5/8 and 1/2 vs 1/4. Ask: Which is greater and how do you know?

Key words

numerator	top number that tells how many parts you have [6]
denominator	bottom number that tells how many equal parts make one whole [6]
same whole	two pizzas that are exactly equal in size so the comparison is fair [11]
common denominator	same size parts used for both fractions so counts can be compared [5]
benchmark	a familiar amount like one-half used to judge other fractions [4]

Materials

- pre-cut paper circles in halves, thirds, fourths, sixths, eighths
- color pencils, glue sticks

Before the lesson

- Print Worksheet Task B for pairs and Task C for homework

- Slides 1-7, 9-11
- Worksheet Task B printed (one per pair)
- mini whiteboards and markers

- Test Slides 1-7 and 9-11 on screen, check colors and text
- Sort pre-cut paper circles into sets of same-size wholes, plus color pencils and glue sticks
- Set desks for pairs with space to lay two same-size circles side by side

Lesson outline

0–5 min **Starter** 5 min · Whole class

Activate same numerator and denominator ideas and hook students with the pizza comparison.

YOU DO

1. Show Slides 1-2 and read the hook: Two friends ordered the same size pizza. One ate 2/3 and the other ate 3/4. Who ate more? Let's prove it with paper, not guessing!
2. Show Slide 3 photo of two same-size candy bars cut different ways and ask for quick votes for 2/3 or 3/4.
3. Remind class that talking about fraction size only makes sense when they refer to the same size whole [11].
4. Ask partners to whisper why guessing is not enough and we need same-size proof.

STUDENTS DO

1. Look at Slides 1-3, vote for 2/3 or 3/4, and whisper a reason to a partner.
2. Tell the class why the pizzas must be the same size to compare fairly.

Say: We compare two fractions with different top and bottom numbers. Today we prove who ate more using same-size pieces, not guessing. Fair compare needs the same whole.

Ask: Why must the two pizzas be the same size to decide who ate more? (Because comparisons are valid only when fractions refer to the same whole.) · With same-size bars, which is greater: 1/2 or 1/4, and how do you see it? (1/2 is greater because more area is shaded on the same whole.)

Check understanding: Show of hands for 2/3 vs 3/4, then cold-call reason. If unsure, hold up 1/2 and 1/4 pieces side by side to see larger area wins.

Support: Show 1/2 and 1/4 paper pieces side by side so students see the larger shaded area wins. **Stretch:** Ask: if 2/3 and 3/4 were cut into 12 tiny pieces, which would have more pieces?

Use: Slides 1–3

5–15 min **Teaching** 10 min · Whole class

Model fair comparison with same-size wholes and same-size pieces.

YOU DO

1. Lay two same-size circles for 2/3 and 3/4 side by side and shade each amount.
2. Recut or draw both as twelfths to make same-size pieces, showing 2/3 = 8/12 and 3/4 = 9/12.
3. Think aloud that with the same denominator, the bigger numerator wins [5], so 8/12 < 9/12.
4. Restate the big idea from Slide 6 and record 2/3 < 3/4 pointing to shaded parts to justify.

STUDENTS DO

1. Watch, track shading on mini whiteboards, and copy the model and symbols.
2. Choral respond for each step: same whole, same pieces, compare counts.

Say: Same whole only, then same-size pieces. I change both to twelfths so pieces match. Eight twelfths is less than nine twelfths, so 2/3 is less than 3/4.

Worked example: Compare 2/3 and 3/4. Step 1: use same-size wholes [11]. Step 2: rewrite with common denominator 12: 2/3 = 8/12, 3/4 = 9/12 [5]. Step 3: compare numerators 8 < 9, so 2/3 < 3/4. Justify with visual fraction models showing more shaded area for 3/4 [1].

Ask: Why did I change both fractions to twelfths? (To make same-size pieces so we can fairly compare the counts.) · With same denominator 12, how do we know 8/12 < 9/12? (Same-size pieces, the bigger numerator wins, and 8 is less than 9.)

Check understanding: All show <, > or = on whiteboards for 2/3 vs 3/4. Reteach with fraction strips if many miss.

Support: Provide pre-drawn same-length bar outlines so focus is only on shading equal parts accurately [8].
Stretch: Ask students to predict the twelfths proof for 3/4 vs 5/6 before drawing.

Use: Slides 5–6

15–30 min **Guided practice** 15 min · Whole class

Practice the two helpers together: common denominator and comparing each to 1/2.

YOU DO

1. Show Slide 4 cards for same bottom number and same count and same-size pieces idea.
2. Model benchmark: half of 8 is 4, so 3/8 is less than half; half of 6 is 3, so 4/6 is more than half, so 3/8 < 4/6 [5]. Explain this is more and less than a benchmark such as one-half [4].
3. Model common denominator: 3/5 = 9/15 and 2/3 = 10/15, so 3/5 < 2/3 because 9 < 10 [5].
4. Lead class to say the > or < sentence out loud for each pair with reason.

STUDENTS DO

1. Use folded strips to line up fractions against 1/2 and call out less than, equal to, or more than half.
2. Copy 3/5 = 9/15 < 10/15 = 2/3 and rehearse the sentence with a partner.

Say: Two helpers. One: compare each to one-half to see which side it sits on. Two: rewrite with the same bottom number, then the bigger top number wins.

Worked example: Compare 3/5 and 2/3. Step 1: common denominator 15. Step 2: 3/5 = 9/15, 2/3 = 10/15 [5]. Step 3: 9 < 10, so 3/5 < 2/3. Compare 3/8 and 4/6: 3/8 is less than half and 4/6 is more than half, so 3/8 < 4/6 [5].

Ask: How do you know 3/8 is less than 1/2 without a picture? (Half of 8 is 4, and 3 is less than 4, so 3/8 is less than half.) · After rewriting, why does 9/15 < 10/15 prove 3/5 < 2/3? (Pieces are now same size, so bigger numerator means bigger fraction.)

Check understanding: Thumbs up for 3/5 < 2/3 and 3/8 < 4/6 with reason. Pull small group to refold strips to half if confused.

Support: Give fraction strips folded in half so students can line up the fraction against 1/2 visually [4]. **Stretch:** Ask which fraction is closer to 1/2, 3/8 or 4/6, and how they know.

Use: Slides 4, 7

30–50 min **Main activity** 20 min · Pairs

Compare unlike fractions with same-size paper models and record with symbols.

YOU DO

1. Hand out same-size circles and assign 2/3 vs 3/4. Remind pairs to lay same-size wholes side by side to see which shaded area is larger.
2. Circulate as partners shade, glue, and write the comparison like 2/3 < 3/4 pointing to shaded parts to justify.
3. Direct pairs to Worksheet Task B to compare next pairs from the same whole and show why with drawing and symbols.
4. Stop class midway to highlight a strong justification and correct different-size wholes.

STUDENTS DO

1. In pairs, shade 2/3 and 3/4 on same-size circles, compare areas, and record 2/3 < 3/4.
2. Complete Worksheet Task B pairs, drawing same-length bars, writing <, >, = and one-sentence reasons.

Say: Showdown time. Shade one same-size circle each, lay them side by side, and prove which is greater. Write the math with > , < , or = and point to the picture to explain.

Worked example: Paper proof for 3/4 and 5/6: draw two bars exact same length, shade each, see which has more shaded area. Here 3/4 is the smaller fraction, so 3/4 < 5/6 [8]. Caption: less of the diagram is shaded.

Ask: How does your drawing prove 2/3 < 3/4? (Both wholes match, both cut to twelfths, 8 parts is less than 9 parts shaded.) · What would make your comparison unfair? (Using different-size wholes, because size only makes sense for the same whole.)

Check understanding: Collect whiteboard sentences and Task B rows. If wholes differ, have pairs re-cut same-length bars to compare fairly with visual models [1].

Support: Start with 1/2 and 1/4 pieces side by side to see the larger area wins before harder fractions.
Stretch: Order three same-size circles, like 1/2, 3/8, and 3/4, from least to greatest and explain the order.

Use: Worksheet Task B

50–60 min **Plenary** 10 min · Whole class

Return to objectives, vote for favorite strategy, and fix same-whole misunderstanding.

YOU DO

1. Run Slide 10 vote: which way do you like best to compare 3/8 and 4/6: same bottom numbers, same top numbers, compare each to 1/2, or draw bars side by side.
2. Use Slide 11 true or false to stress wholes must match and 3/4 > 3/8 because fourths are bigger than eighths with same count.
3. Model same numerator idea: with same numerator the smaller denominator wins because pieces are bigger [5], using same number of parts but parts of different sizes [4].
4. Set exit ticket and preview homework.

STUDENTS DO

1. Vote, defend choice to partner, and write two inequalities from class models.
2. Answer true or false with whiteboards and correct the false statement aloud.

Say: Tell me your helper and why it fits you. Remember: same whole only, use the hungry mouth to the bigger fraction, and always show it with bars or strips.

Worked example: Same count, bigger pieces: 3/4 > 3/8. Both have 3 parts, but fourths are bigger than eighths, so 3 parts of fourths wins [5]. A larger denominator means smaller pieces when sharing the same whole [12].

Ask: When would you choose 1/2 instead of fifteenths for 3/8 vs 4/6? (When one is below half and one is above, the benchmark is faster.) · Why is 3/4 > 3/8 even though both have 3 parts? (Same count, the smaller denominator means bigger pieces, so fourths win.)

Check understanding: Whiteboard vote plus true/false check. Reteach same-whole with different-length bars if needed.

Support: Act out sharing one same-size whole among 4 vs 8 students to feel larger denominator means smaller pieces [12]. **Stretch:** Challenge: change 3/5 and 2/3 into same numerator fractions and compare that way.

Use: Slides 9–11

Common mistakes

Mistake	How to spot it	How to fix it
Thinks bigger denominator means bigger fraction, like 1/8 > 1/4.	Chooses 1/8 over 1/4 or says 8 is bigger so pieces are bigger.	Fold same-size strips for 1/2, 1/4, 1/8 to show larger denominator means smaller pieces [12].
Compares numerators with different-sized pieces, like 2/3 < 3/5 because 2 < 3.	Writes < or > without making common denominator or benchmark.	Rewrite first with same denominator, then with same denominator the bigger numerator wins [5].
Says 3/4 and 4/5 are equal because both are 1 piece away from whole.	Says both missing one so eaten parts equal.	Shade same-size circles and rewrite as 15/20 vs 16/20 to show 4/5 is bigger; missing larger piece means smaller fraction [11][5].

Support

- Start with 1/2 and 1/4 same-size pieces to see larger area wins before harder fractions.
- Use pre-drawn same-length bars and strips folded in half for 1/2 checks.
- Use only pairs where one denominator is a multiple of the other, like 2/5 = 4/10 > 3/10 [8].

Stretch

- Order three same-size circles, like 1/2, 3/8, and 3/4, from least to greatest and explain.
- Add a second proof using a common denominator underneath the picture.
- Try 4/9 and 3/5 and test which common number of parts works for both.

For the LSE or teaching assistant

Sit with target pairs during main activity. Check wholes are identical length, prompt half-of-denominator check for 1/2 sort, and scribe one-sentence reason if writing is slow.

Check for understanding

Question	Answer
Compare 2/3 and 3/4. Write <, > or = and give the twelfths proof.	2/3 < 3/4 because 8/12 < 9/12.
Compare 3/8 and 4/6 using 1/2. Write <, > or = and explain.	3/8 < 4/6 because 3/8 is less than 1/2 and 4/6 is more than 1/2.
True or false: You can compare fairly even if wholes are different sizes.	False. Wholes must match to compare fairly.

Homework

Complete Worksheet Task C: use benchmarks and equivalent fractions to compare and write <, > or =.

Sources

1. CA CSS Math - Content Standards (CA Dept of Education) · cde.ca.gov · https://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf
2. Grade 4 Math Curriculum - Fairfax County Public Schools · fcps.edu · https://www.fcps.edu/academics/elementary/fourth-grade/year-at-a-glance/math
3. Comparing Fraction with Like and Unlike Denominators · fcit.usf.edu · https://fcit.usf.edu/mathvids/plans/cflud/C_plan1.html
4. s09 p3 mathnotes comparing fractions · crdg.hawaii.edu · https://crdg.hawaii.edu/developing-teacher-expertise-mathematics/modules/facilitator-resources/facilitator-fractions-resources/Session9/resources/s09_p3_mathnotes_comparing-fractions.pdf
5. Comparing Fractions: Step-by-Step Guide for Kids · mathifykids.com · https://mathifykids.com/fractions/comparing-fractions/
6. Comparing Fractions – Methods, Definition With Examples · brighterly.com · https://brighterly.com/math/comparing-fractions/
7. Comparing fractions - Methods, Explanation, and Examples · cuemath.com · https://www.cuemath.com/numbers/comparing-fractions/
8. Comparing Fractions Worksheet - Math Salamanders · math-salamanders.com · https://www.math-salamanders.com/comparing-fractions-worksheet.html
9. Comparing Fractions - Free Activities & Learning Resources · splashlearn.com · https://www.splashlearn.com/math/compare-fractions
10. Comparing & Ordering Fractions (Worksheets) · superteacherworksheets.com · https://www.superteacherworksheets.com/comparing-fractions.html
11. Comparing Fractions - Ashleigh's Education Journey · ashleigh-educationjourney.com · https://www.ashleigh-educationjourney.com/comparing-fractions/
12. Comparing Fractions: Visual Tools and Practical Strategies ... · deled.institute · https://deled.institute/teaching-mathematics/comparing-fractions-visual-tools-strategies/
13. The Most Effective Way to Teach Comparing Fractions to 4th ... · teachinginroom5.com · https://teachinginroom5.com/comparing-fractions/
14. How to Compare Fractions? · us.sofatutor.com · https://us.sofatutor.com/mathematics/videos/comparing-fractions-2

Created with LessonDino.com · AI lesson planner with checkable sources

15. Comparing Fractions Using Cross Multiplication – Maths Learn online · sofatutor.co.uk · https://www.sofatutor.co.uk/maths/videos/comparing-fractions-using-cross-multiplication-2
16. Comparing Fractions For Kids | Greater Than, Less Than ... · learnwithsitesforkids.com · https://learnwithsitesforkids.com/subjects/math/fractions/comparing-fractions/
17. Comparing fractions - free lesson with a video - Homeschool Math · homeschoolmath.net · https://www.homeschoolmath.net/teaching/f/comparing_fractions.php
18. Comparing Fractions Resources - Education.com · education.com · https://www.education.com/resources/math/fractions/comparing-fractions/
19. Comparing Like Fractions Explained - Class 6 Maths with Example · teachoo.com · https://www.teachoo.com/26108/5485/Comparing-Like-Fractions/category/Comparing-Fractions/

Created with LessonDino.com · AI lesson planner with checkable sources