

Grade 4 - Comparing Fractions - Lesson

Common Core 4.NF.A.2 · maths-pdf.fr/en/

To compare fractions, make the pieces easy to match. With the same denominator, the greater numerator is greater. With the same numerator, the smaller denominator is greater. Otherwise use a common denominator or compare to $\frac{1}{2}$, then write the answer with the symbols $>$, $<$ or $=$.

Grade 4 · Common Core State Standards: **4.NF.A.2**

Key facts

- Compare fractions only when they are parts of the same whole.
- Same denominator: compare numerators. Same numerator: compare denominators and the smaller denominator is greater.
- A common denominator turns a hard comparison into a numerator comparison, such as $\frac{8}{12} < \frac{9}{12}$.
- Benchmark $\frac{1}{2}$: a fraction is less than $\frac{1}{2}$ when its numerator is less than half the denominator.
- Record a comparison with $>$, $<$ or $=$ and check it on a number line.

How do you compare fractions?

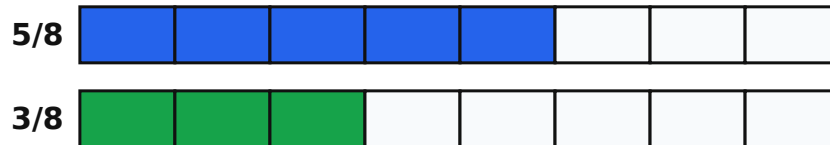
To **compare** two fractions, decide which is greater, which is less, or whether they are equal. Fractions can only be compared when they are parts of the same whole. Use the symbols $>$ (greater than), $<$ (less than) and $=$ (equal to).

Four ways to compare

1. Same denominator: the larger numerator is greater.
2. Same numerator: the smaller denominator is greater, because the pieces are bigger.
3. Different numerators and denominators: rewrite both with a common denominator.
4. Use a benchmark such as $\frac{1}{2}$ to decide quickly.

What if the denominators are the same?

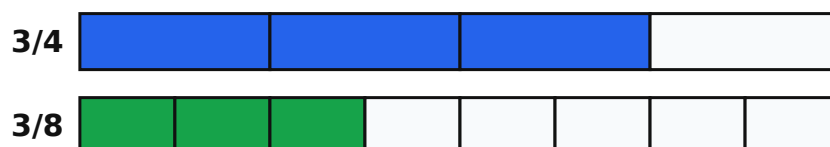
The pieces are the same size, so count the pieces.  because 5 pieces are more than 3 pieces.



Same size pieces: 5 eighths is longer than 3 eighths.

What if the numerators are the same?

Now the number of pieces is the same, but the pieces differ. A fourth is bigger than an eighth, so $\frac{3}{4} > \frac{3}{8}$.



Three bigger pieces beat three smaller pieces.

How do you compare with a common denominator?

Example: Compare $\frac{2}{3}$ and $\frac{3}{4}$.

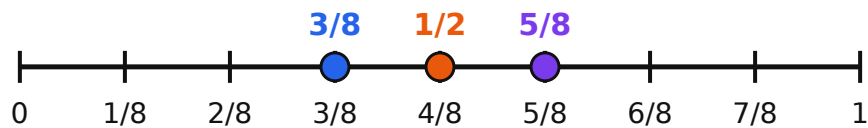
1. Find a common denominator. Both 3 and 4 go into 12.
2. Rewrite: $\frac{2}{3} = \frac{8}{12}$ and $\frac{3}{4} = \frac{9}{12}$.
3. Compare the numerators: 8 is less than 9.
4. Write the result: $\frac{2}{3} < \frac{3}{4}$.



In twelfths, 8 pieces is less than 9 pieces.

How does the benchmark $\frac{1}{2}$ help?

Check whether each fraction is less than, equal to, or more than one half. A fraction is less than $\frac{1}{2}$ when the numerator is less than half the denominator. For example, $\frac{3}{8}$ is less than $\frac{1}{2}$ because $\frac{4}{8}$ is one half. And $\frac{5}{8}$ is more than one half. So $\frac{3}{8} < \frac{5}{8}$.



The point $\frac{1}{2}$ splits the line into smaller and greater fractions.

Always check that the comparison makes sense on the number line: fractions to the right are greater.

What mistakes should you avoid?

- **Comparing only the denominators.** A bigger denominator means smaller pieces, so $\frac{1}{8} < \frac{1}{4}$.
- **Comparing only the numerators** when the denominators are different. Rewrite the fractions first.
- **Comparing different wholes.** Half of a small pizza is not always less than a third of a large pizza.

When you finish, read the comparison out loud. For example, *two thirds is less than three fourths*. If it sounds wrong, check the common denominator again.

Questions about comparing fractions

How do you compare fractions with different denominators?

Rewrite both fractions with the same denominator, then compare the numerators. For $\frac{2}{3}$ and $\frac{3}{4}$, use twelfths: $\frac{8}{12}$ is less than $\frac{9}{12}$.

Which is greater, $\frac{1}{3}$ or $\frac{1}{5}$?

$\frac{1}{3}$ is greater. When the numerators are the same, the fraction with the smaller denominator has bigger pieces. A third of a pizza is bigger than a fifth.

What is a benchmark fraction?

A benchmark fraction is an easy fraction, like $\frac{1}{2}$, that helps you judge other fractions. $\frac{3}{8}$ is less than $\frac{1}{2}$ and $\frac{5}{8}$ is more than $\frac{1}{2}$, so $\frac{3}{8}$ is less than $\frac{5}{8}$.

Why must the wholes be the same size?

Half of a small pizza can be less than a quarter of a huge pizza. Comparisons only make sense when both fractions describe parts of the same whole.

How do you read the symbols $>$ and $<$?

The open side faces the greater number, and the point faces the smaller number. So $\frac{3}{4} > \frac{3}{8}$ reads three fourths is greater than three eighths.