

Grade 4 - Equivalent Fractions - Lesson

Common Core 4.NF.A.1 · maths-pdf.fr/en/

Equivalent fractions are different fractions that name the same amount, such as $\frac{1}{2}$ and $\frac{2}{4}$. To make one, multiply the numerator and the denominator by the same number. For example, $\frac{3}{4}$ becomes $\frac{6}{8}$ when both parts are multiplied by 2. You can also divide both parts by the same number.

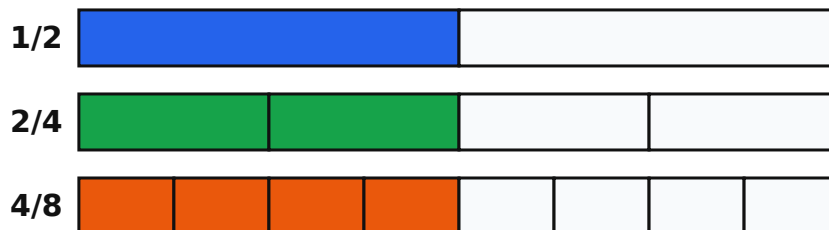
Grade 4 · Common Core State Standards: **4.NF.A.1**

Key facts

- Equivalent fractions name the same amount and sit at the same point on a number line.
- Multiply or divide the numerator and denominator by the same number to make an equivalent fraction.
- Multiplying by $\frac{2}{2}$, $\frac{3}{3}$ or any $\frac{n}{n}$ is multiplying by 1, so the value stays the same.
- Tenths change to hundredths by multiplying by 10, so $\frac{3}{10} = \frac{30}{100}$.
- Adding the same number to the top and bottom does not make an equivalent fraction.

What are equivalent fractions?

Equivalent fractions are different fractions that name the same amount. Look at the strips below. The shaded part is the same size in every strip, even though the number of equal parts is different.



One half, two fourths and four eighths are the same amount.

Equivalent fractions

$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$. They are at the same point on a number line.

How do you make an equivalent fraction?

Multiply the numerator and the denominator by the **same number**. This works because $\frac{m}{m}$ is equal to 1, and multiplying by 1 does not change the value.

Example: Write $\frac{3}{4}$ as a fraction with denominator 8.

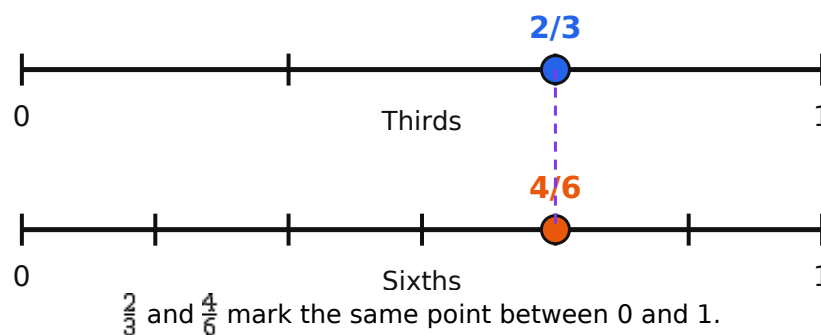
1. Compare the denominators: $4 \times 2 = 8$.
2. Multiply the numerator by the same number: $3 \times 2 = 6$.
3. Write the new fraction: $\frac{3}{4} = \frac{6}{8}$.

$$\frac{3}{4} = \frac{6}{8}$$

Multiply the top and the bottom by 2.

How can you see equivalent fractions on a number line?

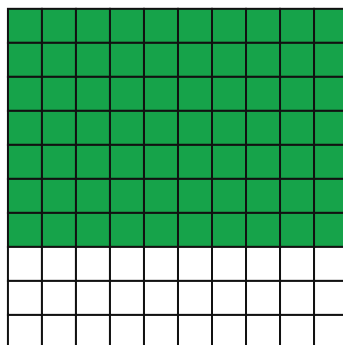
Equivalent fractions land on the same point. Two thirds on a number line cut into thirds is at the same spot as four sixths on a number line cut into sixths.



Can you divide to find equivalent fractions?

Yes. If the numerator and denominator can both be divided by the same number, divide to get an equivalent fraction with smaller numbers. For example, $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$.

Fractions with denominator 10 can be changed to hundredths by multiplying by 10: $\frac{7}{10} = \frac{70}{100}$. This works because 100 is 10 times 10.



70 of 100 squares is the same as 7 of 10 columns.

What mistakes should you avoid?

- **Adding instead of multiplying.** Adding 2 to the top and bottom of $\frac{1}{3}$ gives $\frac{3}{5}$, which is a different amount.
- **Changing only one part.** If you multiply the denominator by 3, you must multiply the numerator by 3 as well.
- **Forgetting the check.** Divide the new denominator by the old one to find the multiplier, then use it on the numerator.

A quick check: draw two strips, one cut into the first denominator and one cut into the second. If the shaded parts line up, the fractions are equivalent.

Questions about equivalent fractions

What are equivalent fractions?

Equivalent fractions are fractions that have different numerators and denominators but name the same amount. For example, $\frac{2}{3}$ and $\frac{4}{6}$ are equivalent.

How do you make an equivalent fraction?

Multiply the numerator and the denominator by the same whole number. For $\frac{2}{5}$, multiply both by 3 to get $\frac{6}{15}$. You can also divide both by a common factor.

How do you check if two fractions are equal?

Find the number that changes one denominator into the other, then multiply the numerator by the same number. If you get the other numerator, they are equal. For $\frac{3}{4}$ and $\frac{9}{12}$, 4 times 3 is 12 and 3 times 3 is 9, so they are equal.

Why does multiplying the top and bottom by the same number work?

Multiplying by $\frac{2}{2}$ or $\frac{3}{3}$ is multiplying by 1, because the top and bottom are the same.

Multiplying a number by 1 never changes its value.

Can I add the same number to the top and bottom?

No. Adding 1 to $\frac{2}{3}$ gives $\frac{3}{4}$, which is a different amount. The two parts must both be multiplied or both be divided by the same number.