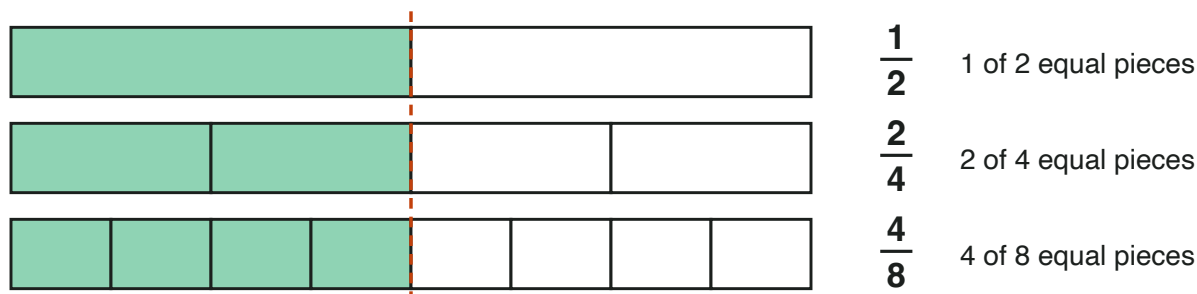


Equivalent Fractions: How It Works

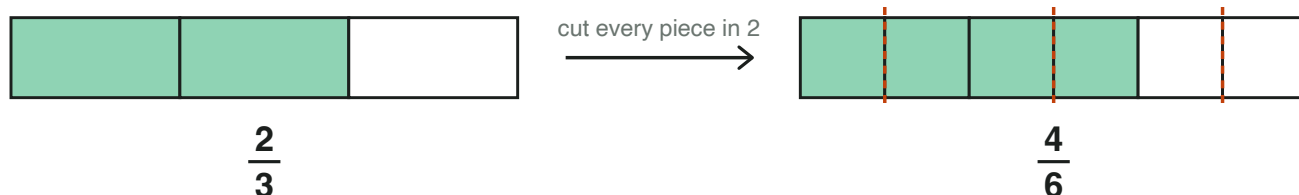
Two fractions are equivalent when they name the same amount.

1. Same amount, different names



The shaded part is the same size in every bar. Only the number of pieces changed. So $\frac{1}{2}$, $\frac{2}{4}$ and $\frac{4}{8}$ are **equivalent fractions**: different names for the same amount.

2. Why it works



Cutting every piece in 2 makes twice as many pieces **and** twice as many shaded pieces. The top and the bottom are both multiplied by 2.

$$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

3. The rule

Multiply or divide the top and the bottom by the **same number**. The fraction keeps its value.

Example: make bigger numbers $\frac{3}{4} = \frac{?}{12}$

Step 1. Look at the bottoms. $4 \times 3 = 12$.

Step 2. Do the same to the top. $3 \times 3 = 9$.

So $\frac{3}{4} = \frac{9}{12}$

Example: make smaller numbers $\frac{6}{8} = \frac{3}{?}$

Step 1. Look at the tops. $6 \div 2 = 3$.

Step 2. Do the same to the bottom. $8 \div 2 = 4$.

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

Watch out

Adding the same number to the top and the bottom does **not** work. $\frac{1}{2}$ is not equal to $\frac{2}{3}$, even though $1 + 1 = 2$ and $2 + 1 = 3$. The bars show it. Only multiplying or dividing keeps a fraction equal.

