

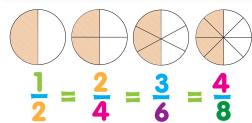
-- Fractions --



Equivalent Fractions

Equivalent fractions: fractions that use different numbers, that represents the same value

-To find an equivalent fraction, **multiply** or **divide** the numerator and denominator by the **same** number.



Ex: Multiplication

$$\frac{1}{2} \times \frac{2}{2} = \frac{2}{4}$$

$$\frac{2}{9} \times \frac{3}{3} = \frac{6}{27}$$

Ex: Division

$$\frac{4}{8} \div \frac{4}{4} = \frac{1}{2}$$

$$\frac{12}{36} \div \frac{4}{4} = \frac{3}{9}$$

Simplify Fractions

-Divide the fraction by the **greatest common factor** of the numerator and denominator

Ex: Simply $\frac{3}{12} \rightarrow \frac{3}{12} \div \frac{3}{3} = \frac{1}{4}$

$\frac{1}{4}$ is fully simplified because there are no other common factors between 1 and 4.

Compare and Order Fractions and Mixed Numbers

Compare Fractions and Mixed Numbers

Order Fractions and Mixed Numbers

- If the **denominators** are **equal**, then **compare** the **numerators**. The fraction with the larger numerator is greater: $\frac{4}{12} < \frac{6}{12}$
- If the **numerators** are **equal**, then **compare** the **denominators**. The fraction with the smaller denominator is greater: $\frac{4}{7} < \frac{4}{20}$
- If the fractions have different numerators and denominators, then find equivalent fractions with the same denominator.
Ex: compare the fractions $\frac{2}{3}$ and $\frac{5}{8} \rightarrow \frac{2}{3} \times \frac{8}{8} = \frac{16}{24}$ and $\frac{5}{8} \times \frac{3}{3} = \frac{15}{24} \rightarrow \frac{16}{24} > \frac{15}{24}$, therefore, $\frac{2}{3} > \frac{5}{8}$

To compare mixed numbers

- If the fractions are equal, then compare the whole numbers.
- If the fractions are not equal, then find equivalent fractions with the same denominator (see above to compare fractions).
- You can also change the mixed number into an improper fraction, and compare the fractions.

Add and Subtract

Multiply

Divide

- If the fractions have a **common denom**, simply add or subtract the numerator
- If the fractions have **different denominators**, find equivalent fractions with a common denom. Then add and subtract the numerator.
Ex: $\frac{2}{3} - \frac{2}{5} \rightarrow \frac{10}{15} - \frac{6}{15} = \frac{4}{15}$

1. Simply multiply the numerator and the denominator across. A common denominator is not needed to multiply fractions.
2. Simplify the fraction if needed.
Ex: $\frac{2}{3} \times \frac{6}{7} = \frac{12}{21} = \frac{4}{7}$

- Keep** the first fraction
- Flip** the second fraction
- Change** the sign
- Ex:** $\frac{5}{2} \div \frac{3}{4} = \frac{5}{2} \times \frac{4}{3} = \frac{20}{6} = \frac{10}{3}$

Fraction of Another Number

Ex. Find $\frac{1}{3}$ of 9

1. Write it as $\frac{1}{3} \times 9$ or $\frac{1}{3} \times \frac{9}{1}$, think of the "of" as a multiplication sign.
2. Multiply the numerators, $1 \times 9 = 9$
3. Divide by the denominator of the fraction, $9 \div 3 = 3$.
 -You can also just multiply fractions, then simplify the answer.