

Adding and Subtracting Fractions

Important
Make all
denominators
the same!

Are the denominators the same?

yes 

no 

Great!
e.g. $\frac{4}{8} + \frac{2}{8} = \frac{6}{8}$

Is one denominator a multiple of the other?

yes 

no 

Make the denominator the same (the largest denominator).
e.g. $\frac{4}{10} + \frac{1}{5} =$
 $\frac{4}{10} + \frac{2}{10} = \frac{6}{10}$

Find a common multiple.
e.g. $\frac{2}{3} + \frac{1}{5} =$
 $\frac{10}{15} + \frac{3}{15} = \frac{13}{15}$

Tip
If unsure, multiply the denominators together.
e.g. $3 \times 5 = 15$

numerator
denominator

Adding Mixed Number Fractions

Important
Make all
denominators
the same!

Are the denominators the same?

yes

Great!

Don't forget to add the whole numbers together too!

$$\text{e.g. } 2\frac{4}{8} + 1\frac{2}{8} = 3\frac{6}{8}$$

no

Is one denominator a multiple of the other?

yes

Make the denominator the same (the largest denominator).

Don't forget to add the whole numbers together too!

$$\text{e.g. } 2\frac{4}{10} + 1\frac{1}{5} =$$

$$2\frac{4}{10} + 1\frac{2}{10} = 3\frac{6}{10}$$

no

Find a common multiple.

Don't forget to add the whole numbers together too!

$$\text{e.g. } 2\frac{2}{3} + 1\frac{1}{5} =$$

$$2\frac{10}{15} + 1\frac{3}{15} = 3\frac{13}{15}$$

Tip

If unsure, multiply the denominators

numerator
denominator

Subtracting Mixed Number Fractions

First, make any mixed number fractions into improper fractions.

Important
Make all denominators the same!



Are the denominators the same?

yes

Great!

e.g. $2\frac{1}{3} - 1\frac{2}{3} =$
 $\frac{7}{3} - \frac{5}{3} = \frac{2}{3}$

no

Is one denominator a multiple of the other?

yes

Make the denominator the same (the largest denominator).

e.g. $2\frac{1}{3} - 1\frac{2}{6} =$
 $\frac{7}{3 \times 2} - \frac{8}{6} =$
 $\frac{14}{6} - \frac{8}{6} = \frac{6}{6} = 1$

no

Find a common multiple.

e.g. $2\frac{2}{3} - 1\frac{1}{5} =$
 $\frac{8}{3 \times 5} - \frac{6}{5 \times 3} =$
 $\frac{40}{15} - \frac{18}{15} = \frac{22}{15} = 1\frac{7}{15}$

Tip
If unsure, multiply the denominators together.
e.g. $3 \times 5 = 15$

numerator
denominator

Multiplying and Dividing Fractions

Are you multiplying?

yes



no



Is there a mixed number fraction?

yes



no

Partition then add the answers together.

e.g. $5 \times 3 \frac{1}{4} = 16 \frac{1}{4}$

$$5 \times 3 = 15$$

+

$$\frac{5}{1} \times \frac{1}{4} = \frac{5}{4} = 1 \frac{1}{4}$$

Yay!



e.g. $\frac{4}{8} \times \frac{2}{8} = \frac{8}{64}$

e.g. $\frac{3}{8} \div \frac{2}{1}$

$\frac{3}{8} \times \frac{1}{2} = \frac{3}{16}$

e.g. $\frac{3}{1} \div \frac{4}{5}$

$\frac{3}{1} \times \frac{5}{4} = \frac{15}{4} = 3 \frac{3}{4}$

Divide

Keep the 1st fraction the same.


Flip the 2nd fraction.

Change the sign.

numerator
denominator

Check your answer.

Is your answer an improper fraction?

e.g. $\frac{10}{8}$ **yes** 

 **no**

Convert it to a mixed number fraction.

$$\frac{10}{8} = 1 \frac{2}{8}$$

$$10 \div 8 = 1 \text{ r } 2$$

Do nothing (unless you've been asked to simplify)!

Mixed Numbers Fractions to Improper Fractions

$$2 \frac{4}{5} = \frac{14}{5}$$

$$2 \times 5 = 10$$
$$10 + 4 = 14$$

