

Adding and Subtracting Fractions

Make the denominators match, then add or subtract only the numerators. Three examples, every step shown.

1 Same denominator

Work out $5/12 + 11/12$.

1. The denominators already match: both are twelfths.
2. Add the numerators only: $5 + 11 = 16$, giving $16/12$.
3. Simplify: the HCF of 16 and 12 is 4, so $16/12 = 4/3$.
4. $4/3$ is improper: $4 \div 3 = 1$ remainder 1, so $4/3 = 1 \frac{1}{3}$.

ANSWER **1 and $1/3$ (or $4/3$)**

2 Different denominators

Work out $5/6 - 1/4$.

1. Lowest common multiple of 6 and 4: multiples of 6 are 6, 12...; of 4 are 4, 8, 12... So use 12.
2. Rename: $5/6 = 10/12$ ($\times 2$ top and bottom) and $1/4 = 3/12$ ($\times 3$ top and bottom).
3. Subtract the numerators: $10 - 3 = 7$, giving $7/12$.
4. 7 and 12 share no factor except 1, so $7/12$ is fully simplified.
5. Using 24 also works: $20/24 - 6/24 = 14/24 = 7/12$, but needs more simplifying.

ANSWER **$7/12$**

3 Mixed numbers

Work out $3 \frac{1}{4} - 1 \frac{2}{3}$.

1. Make improper fractions: $3 \frac{1}{4} = 13/4$ ($3 \times 4 + 1$) and $1 \frac{2}{3} = 5/3$ ($1 \times 3 + 2$).
2. The LCM of 4 and 3 is 12: $13/4 = 39/12$ and $5/3 = 20/12$.
3. Subtract the numerators: $39 - 20 = 19$, giving $19/12$.
4. Back to a mixed number: $19 \div 12 = 1$ remainder 7, so $1 \frac{7}{12}$.
5. Check with decimals: $3.25 - 1.67 \approx 1.58$, and $1 \frac{7}{12} \approx 1.58$.

ANSWER **1 and $7/12$**



Estimate first

Before you start, guess roughly how big the answer should be. $5/6$ is between $3/4$ and 1, so $5/6 - 1/4$ is between $1/2$ and $3/4$. $7/12$ is about 0.58, so it fits. An answer far from your estimate means a slip.

NEXT IN THE SERIES

4. Multiplying and Dividing Fractions