HOW TO FIND A LEAST COMMON DENOMINATOR (LCD)

All numerators shown are “1”

Division Method, Easiest

Check to see if the smaller number in the denominator divides evenly into the larger number in the denominator.

\[
\frac{1}{4} + \frac{1}{8}
\]

Use 4 and 8. 4 divides into 8 evenly.

The least common denominator (LCD) is 8. If this method doesn’t work, use the next one.

Ladder Method for Two Fractions

\[
\frac{1}{8} + \frac{1}{12}
\]

Write the denominators, 8 and 12, side by side. The order doesn’t matter. Draw an “L” under the numbers.

\[
\begin{array}{c|cc}
2 & 8 & 12 \\
4 & 6 & \\
\end{array}
\]

2 works here. Divide 2 into 8 and 12 and write the answers, 4 and 6, below.

Find another number that divides into 4 and 6 evenly, if possible. Write the answers, 2 and 3, below.

Repeat until the only number dividing evenly into both numbers is 1.

\[
\begin{array}{c|ccc}
2 & 8 & 12 & \\
2 & 4 & 6 & \\
2 & 3 & & \\
\end{array}
\]

\[
2 \times 2 \times 2 \times 3 = 24
\]

Ladder Method for 3 or More Fractions

\[
\frac{1}{4} + \frac{1}{6} + \frac{1}{18}
\]

Write 4, 6, and 18 side by side.

Find a PRIME NUMBER that divides evenly into ANY TWO or more numbers, if possible.

\[
\begin{array}{c|ccc}
2 & 4 & 6 & 18 \\
2 & 3 & 9 & \\
\end{array}
\]

2 works here. Divide 2 into 4, 6, 18 and write the answers below (2, 3, 9).

Find another prime number that divides into any 2 or more numbers evenly, if possible. 3 works, dividing into 3 and 9, but not 2. Copy the 2 below. Write the answers to the division into 3 and 9 below (1, 3).

\[
\begin{array}{c|ccc}
3 & 4 & 6 & 18 \\
2 & 3 & 9 & \\
2 & 1 & 3 & \\
\end{array}
\]

Repeat until no prime number divides evenly into any 2 numbers. Multiply the outside numbers. The LCD is 36.

Multiplication Method

This method always finds a common denominator (CD), but not necessarily an LCD. It doesn’t work well if the numbers are large.

\[
\frac{1}{5} + \frac{1}{6}
\]

Multiply 5 times 6. 5 \times 6 = 30

The common denominator (CD) is 30.

Calculator Method

Multiply the larger denominator by 2, 3, 4, etc. If the product is evenly divisible by the smaller denominator, the LCD is found.

\[
\frac{1}{9} + \frac{1}{12}
\]

12 \times 2 = 24 \quad 24 \div 9 = 2.7 \quad (Not even)

\[
12 \times 3 = 36 \quad 36 \div 9 = 4 \quad (36 \text{ is LCD})
\]