

LEAST COMMON Denominators

When you have a list of fractions, in which they all have a different denominator, and you wish to add or subtract them, remember to first find a common denominator!

You can find the least of the common denominators (ESPECIALLY) if asked for one, or just a common denominator.

REMEMBER THE TWO WAYS:

① Find multiples

secret: This works best for small numbers.

Ex. Find the LCD (or a common denominator)

for $\frac{1}{2}, \frac{1}{3}, \frac{1}{8}, \frac{3}{4}$.

$2 \cdot 1 = 2$	$3 \cdot 1 = 3$	$8 \cdot 1 = 8$	$4 \cdot 1 = 4$
$2 \cdot 2 = 4$	$3 \cdot 2 = 6$	$8 \cdot 2 = 16$	$4 \cdot 2 = 8$
$2 \cdot 3 = 6$	$3 \cdot 3 = 9$	$8 \cdot 3 = 24$	$4 \cdot 3 = 12$
$2 \cdot 4 = 8$	$3 \cdot 4 = 12$		$4 \cdot 4 = 16$
$2 \cdot 5 = 10$	$3 \cdot 5 = 15$		$4 \cdot 5 = 20$
$2 \cdot 6 = 12$	$3 \cdot 6 = 18$		$4 \cdot 6 = 24$
$2 \cdot 7 = 14$	$3 \cdot 7 = 21$		
$2 \cdot 8 = 16$	$3 \cdot 8 = 24$		
$2 \cdot 9 = 18$			
$2 \cdot 10 = 20$			
$2 \cdot 11 = 22$			
$2 \cdot 12 = 24$			

Find the multiples in common among the denominators!



Notice how 24 is the first multiple that is common amongst all four denominators? That makes it the LEAST COMMON ~~Multiple~~ Denominator!

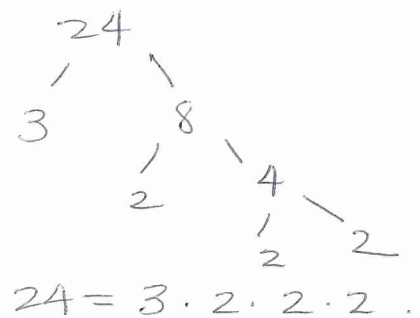
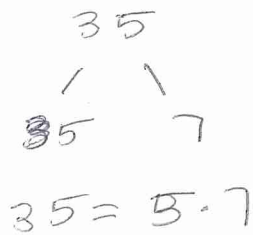
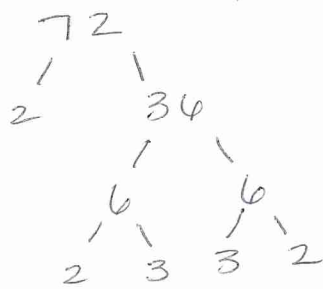
Multiples of 2, 3, 8, 4

② Prime Factorization Method

You can also use this method to find the LCD of a list of fractions. Just remember it works best for large numbers.

Ex. Find the LCD of $\frac{5}{72}$, $\frac{3}{35}$, $\frac{9}{24}$

i. Find PF for each denominator



$$72 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3$$

ii. Circle the factor that appear the greatest number of times!

$$72 = \textcircled{2 \cdot 2 \cdot 2} \textcircled{3 \cdot 3}$$

$$35 = \textcircled{5} \cdot \textcircled{7}$$

$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

2 appears three times in 72 and in 24! So let's only circle one.

3 appears twice in 72, and once in 24. So we only circle the twice.

5 and 7 both appear once, so we just circle them

iii. Multiply what you circled!

$$2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5 \cdot 7$$

$$\begin{array}{ccc} \swarrow \downarrow \searrow & \swarrow \searrow & \swarrow \searrow \\ 8 & \cdot & 9 \cdot 35 \end{array}$$

$$\begin{array}{cc} \swarrow \searrow & | \\ 72 & \cdot & 35 \end{array}$$

$$\swarrow \searrow$$
$$2,520$$

$$\begin{array}{r} 1 \\ 72 \\ \hline 135 \\ \hline 360 \\ + 216 \\ \hline 2520 \end{array}$$

So the LCD is 2,520!

Remember: you can use whatever method you prefer!