

LAZY BONES METHOD OF ADDING AND SUBTRACTING WITH UNLIKE DENOMINATORS



Dr. Frankenstein and I have developed a handy new system for adding and subtracting fractions with unlike denominators!



We call it the "Lazy Bones" method because it cuts out a lot of extra work and writing. You need only work out the essentials!



Dr. Frankenstein and Professor Panda have made adding and subtracting fractions with different denominators as easy as 1-2-3 and reduce! Just follow the steps below to see how their handy new system works.

STEPS	EXAMPLE
<p>① Factorize: Write the prime factorization of each fraction's denominator (in parentheses) both above and below the fraction bar of the other fraction.</p>	<p>①</p> $\begin{array}{c} (3 \times 5) \\ 7 \\ \hline 12 \\ (3 \times 5) \end{array} + \begin{array}{c} (2 \times 2 \times 3) \\ 4 \\ \hline 15 \\ (2 \times 2 \times 3) \end{array}$
<p>② Cancel and multiply: Cancel any numbers that appear in <i>all four sets of parentheses</i>. After cancelling, multiply the numerators and denominators by the numbers remaining in the parentheses above or below them.</p>	<p>②</p> $\begin{array}{cc} 7 \times 5 = 35 & 4 \times 2 \times 2 = 16 \\ (\cancel{3} \times 5) & (2 \times 2 \times \cancel{3}) \\ \hline 7 & 4 \\ \hline 12 & + & 15 \\ (\cancel{3} \times 5) & & (2 \times 2 \times \cancel{3}) \\ 12 \times 5 = 60 & & 15 \times 2 \times 2 = 60 \end{array}$
<p>③ Rewrite and add or subtract: Use the products from step ② to rewrite the problem. The fractions should now have a common denominator, so you can add or subtract the numerators and keep the denominator the same!</p>	<p>③</p> $= \frac{35}{60} + \frac{16}{60} = \frac{51}{60}$
<p>④ After finishing step ③, check to see if your answer needs to be reduced.</p>	<p>④</p> $\frac{51 \div 3}{60 \div 3} = \frac{17}{20}$
<p>Here's another example. Remember, cancel only factors that appear in <i>all four sets of parentheses</i>. If all the numbers in the parentheses get cancelled, just multiply by one.</p> <p>Tip: If you find the GCF of the two denominators, you can fill the parentheses with factorizations that use the GCF instead of prime factorizing.</p>	<p>EXAMPLE 2</p> $\begin{array}{cc} 5 \times 5 = 25 & 11 \times 1 = 11 \\ (\cancel{2} \times \cancel{3} \times 5) & (\cancel{2} \times \cancel{3}) \\ \hline 5 & 11 \\ \hline 6 & 30 \\ (\cancel{2} \times \cancel{3} \times 5) & (\cancel{2} \times \cancel{3}) \\ 6 \times 5 = 30 & 30 \times 1 = 30 \end{array} = \frac{25}{30} - \frac{11}{30} = \frac{14}{30}$ $\frac{14 \div 2}{30 \div 2} = \frac{7}{15}$