Example 3-9: The fundamental frequency is the *largest* F_0 such that $f_k = kF_0$ where k is an integer. In mathematical terms, it is related to the *greatest common divisor (gcd)* of a set of integers. If all the frequencies f_k are integers, then we can state

$$F_0 = \gcd\{f_k\} \quad k = 1, 2, \ldots, N$$

For example, if the signal is the sum of sinusoids with frequencies 12, 20, and 60 Hz, then $F_0 = 4$ Hz, because 12 Hz is the 3rd harmonic, 20 Hz is the 5th harmonic, and 60 Hz is the 15th harmonic.

McClellan, Schafer, and Yoder, *DSP First, 2e*, ISBN 0-13-065562-7.
Prentice Hall, Upper Saddle River, NJ 07458.