Problem of the Week
Problem C
Positively Perfect Prime Products

A *prime* number is any number that has exactly two positive integer factors, 1 and the number itself. A *composite* number has more than two positive integer factors. The number 1 is neither prime nor composite.

Four distinct prime numbers have a product of $d10$: a three-digit number with hundreds digit d. Determine all possible values of the sum of these four prime numbers.