

## Adding Primes

Using the nine digits, 1 through 9, once each, make a set of prime numbers. Then add your prime numbers together.

Example:

$$\begin{array}{r} 61 \\ 283 \\ 47 \\ + \quad \underline{59} \\ 450 \end{array}$$

The goal is to find the set with the smallest possible sum. The total in the example shown is 450. This total can be reduced quite a bit!

Reminder: primes are numbers like 37 with exactly two factors. To check if a number is prime you need to make sure it's not divisible by any prime number smaller than its square root. For 37, you would need to check that 2, 3, and 5 don't go into 37. (Why does this method work? Why don't we need to check if composite numbers like 6 are factors? Why don't we need to check numbers above the square root of 37, such as 7?)

When you write up your solution, explain your strategy.

I believe this problem is from the British puzzle-creator Henry Ernest Dudeney. I have a nice solution, but I don't know if mine is the lowest!

Have fun!