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LETTERS TO THE EDITOR

Prime Sums (Harry L Nelson)

I found Jeffrey Shallit's observations in his letter, "Prime Sums," in *JRM, 14:*1, p. 44, quite interesting and took the liberty of extending his results. First, though, it should be mentioned that the first prime which divides the sum of all primes up to and including itself is not 5 but 2. In addition, I found one further instance, namely, 415074643, the 22096548th prime, which divides the sum of all the primes up to and including itself:

$$4456255064711219 = 7 \cdot 11 \cdot 13 \cdot 139429 \cdot 415074643$$

While I was at it, I recorded the sum of primes at the end of each power of ten. These values might prove useful to others in checking out prime-finding programs – or to me if they are wrong.

Table 1. Known Values of Primes Which Divide the Sum of All Primes Less Than or Equal to Themselves

Prime	*Sum*	*Index of Prime*
2	2	1
5	10	3
71	639	20
369119	5537154119	31464
415074643	4456255064711219	22096548