Problem of the Week Problem E Missing the Fives III

Bobbi lists the positive integers, in order, excluding all multiples of 5. Her resulting list is

 $1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 16, 17, \ldots$

Determine the sum of the first 2023 integers in Bobbi's list.



NOTE:

In solving this problem, it may be helpful to use the fact that the sum of the first n positive integers is equal to $\frac{n(n+1)}{2}$. That is,

$$1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2}$$