Finding the next, 10!, we simply multiply by the prime factorisation of 10 = 2 5 so

$$10! = 2^8 \quad 3^4 \quad 5^2 \quad 7:$$

We can see that 10 is the smallest number n for which 100 divides $n!$. So let's add:

last two digits of $n!$	n
1	1
2	2
6	3
24	4
20	5
20	6
40	7
20	8
80	9

summing the left hand column gives 13.

For 3 digits, we do the same thing, but nd the smallest n