

7. Can you use these ideas to find long sequences of 20 consecutive numbers that do not contain any primes?

Ans:- We observed that there are 25 prime numbers between 1-100 & 168 prime numbers between 1-1000. So, a sequence of consecutive numbers that do not contain any primes is a large number which can be arrived by factorial & addition (like in problem no. 1). To find a sequence of 20 consecutive numbers that do not contain any

prime, we need to ensure all numbers are composite. Since '1' is not a composite number, the factorial number will be one greater than the sequence of 20 consecutive numbers which is $21!$. We need to add the numbers from 2 to 21 to arrive at the 20 consecutive numbers. The 20 consecutive numbers not containing any primes are :-
 $21! + 2, 21! + 3, \dots, 21! + 21$.
($! = \text{factorial}$)

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