

4 different problems for each type of paper :

Problem 1 : Type 1 Find the sum of all the positive integer numbers ($n > 0$) that are divisible by 7 or 11 and that are below 1 lack (ie. $n < 100000$).

For example, for the numbers below 50, we have 7, 11, 14, 21, 22, 28, 33, 35, 42, 44 and 49 so the sum is $7 + 11 + 14 + 21 + 22 + 28 + 33 + 35 + 42 + 44 + 49 = 306$.

Problem 1 : Type 2 Find the sum of the first 30 Fibonacci numbers $F_0 + F_1 + \dots + F_{28} + F_{29}$.

We remind that the sequence $(F_n)_{n \in \mathbb{N}}$ is given by $F_0 = 1$, $F_1 = 2$, and $F_{n+2} = F_{n+1} + F_n$.

For example, the first 5 Fibonacci numbers is 1, 2, 3, 5 and 8 so, their sum is $1 + 2 + 3 + 5 + 8 = 19$.

Problem 1 : Type 3 Give the first 14 values of the factorial numbers ($0!, 1!, \dots, 13!$), and give their sum.

You also need to find from which value of n its factorial $n!$ is strictly greater than 10^{15} .

We remind that the factorial function is defined with $0! = 1$, $n! = 1 \times 2 \times \dots \times n = \prod_{i=1}^n i$ (and satisfies $(n+1)! = (n+1) \times n!$ recursively).

Problem 1 : Type 4 Find the product of all the positive integer numbers ($n > 0$) that are divisible by 3 or 5 and that are below 1 lack (ie. $n < 100000$).

For example, for the numbers below 20, we have 3, 5, 6, 9, 10, 12, 15 and 18 so the sum is $3 + 5 + 6 + 9 + 10 + 12 + 15 + 18 = 78$.