Can you divide that

The problem is based on the properties of divisibility being applied on some basic relationships between factorials.

The factorial of a number x_i is divisible by the factorial of **y** if x_i is greater than or equal to **y** because **(y!) = (k*x_i!)**.

The properties of divisibility state that if some integers **x,y,z** are all divisible by some number **k**, then **(x + y + z)** is also divisible by **k**.

So using the above 2 properties, it's safe to conclude that all numbers of above the given number **y** can be ignored while finding your answer.

Then it seems obvious that factorials of numbers smaller than **y** can never be divided by the factorial of **y**.

However there is of the property of factorials that states **((n+1)*n!) = (n+1)!** . This means that even if the number is smaller, with enough repetitions of them in **A**, the smaller numbers can also become equivalent to a number greater than or equal to **y** in the context of this problem.

So to solve the problem, you can count the occurrences of each number, and iterating from the smallest possible number , you can divide the count by number+1 and add the quotient to the count of number+1 **(cnt_{n+1} += floor(cnt_n / (n+1)))**. If the count of a number smaller than **y** leaves a remainder when it's divided by number+1, the sum of the factorials cannot be divisible by **y.**