Factorial length

Given integer **n**, print length of **n!** (which is factorial of **n**).

Input

The first line of the standard input contains one integer **t** (t < 10001) which is the number of test cases.

In each of the next **t** lines there is number **n** ($0 <= n <= 5*10^9$).

Output

For each test, print the length of **n!** (which is factorial of **n**).

Example

Input:
3
1
10
100

Output:
1
7
158