

Amazing Prime Sequence

Bablu is very fond of Series and Sequences...

After studying Fibonacci Series in Class IX, he was impressed and he designed his own sequence as follows...

$$a[0] = a[1] = 0$$

For $n > 1$, $a[n] = a[n - 1] + f(n)$, where $f(n)$ is smallest prime factor of n .

He is also very fond of programming and thus made a small program to find $a[n]$, but since he is in Class IX, he is not very good at programming. So, he asks you for help. Your task is to find $a[n]$ for the above sequence....

Input

Your code will be checked for multiple Test Cases.

First Line of Input contains T (≤ 100), the number of Test Cases.

Next T lines contain a single number N . ($1 < N < 10^7$).

Output

Single line containing $a[n]$ i.e. n th number of the sequence for each test case.

Example

Input:

3
2
3
4

Output:

2
5
7