Prime Sum
Timelimit: 1 second

Let P(n) denote the sum of the first n prime numbers. For example, P(1) = 2 and P(3) = 10, since the first three prime numbers are 2, 3 and 5, respectively. Write a program to determine the value of the function P(n) for different values of n. The first few prime sums are 2, 5, 10, 17, 28, 41, 58 and 77.

Input

The first line of the input file contains a single positive integer, *t (t ≤ 20000)*, representing the number of test cases. The following *t* lines contain one positive integer *n (n ≤ 10000)*, representing the prime sum to be computed for the case.

Output

Write out a single integer on a line by itself for each test case, indicating P(n), for the corresponding input value n.

Sample Input

```
3
1
6
8
```

Sample Output

```
2
41
77
```

Assignment Details

Even though this assignment can be coded with statically allocated arrays, please write your solution using dynamically allocated arrays. (Your programs should have either malloc/calloc calls, as well as a call to free.)

Note: For full credit, please use the Sieve of Eratosthenes to efficiently generate the first 10000 primes and then, just generate each of the prime sums instead of recomputing for each test case. (If you do the latter, you will **NOT** earn full credit.)

Note: Also to earn full credit, you must properly allocate and free memory dynamically.