Collatz Conjecture

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	256 megabytes

Busy Beaver recently learned about the Collatz Conjecture! He has written down a sequence of N positive integers $a_1, a_2, \ldots, a_N$ on a blackboard to experiment with and further his understanding of the conjecture. He also notices a counter left on a table and comes up with the following game to play.

The counter initially starts at the number 1. A move consists of picking a number on the blackboard and replacing it:

- If the counter shows an odd number, Busy Beaver must pick some odd number x on the board and replace it with $3x + 1$.
- If the counter shows an even number, he must pick some even number y on the board and replace it with $\frac{y}{2}$.

After each replacement, Busy Beaver increments the counter by 1. If he cannot make any move, the game ends, and his score is the number of moves he performed (equivalently, one less than the number on the counter).

Busy Beaver wants to play this game for as long as possible. Help him determine the maximum number of moves he can perform before he runs out of moves!

Input

The first line contains the number of test cases T ($1 \leq T \leq 500$).

The first line of each test case contains a single integer N ($1 \leq N \leq 500$), the number of positive integers on the blackboard.

The second line of each test case contains N positive integers $a_1, a_2, \ldots, a_N$ ($1 \leq a_i \leq 10^6$). **It can be shown that any Collatz sequence started on a number at most 10^6 will reach 1 after at most 524 moves. Additionally, it can also be shown that Busy Beaver will eventually run out of moves and that he never writes a number larger than 10^{18} on the blackboard.**

The sum of N across all test cases does not exceed 500.

Output

For each test case, output a single integer — the maximum number of moves that Busy Beaver can perform.

Example

standard input	standard output
6 1 3 5 2 4 6 8 10 6 4 5 6 6 5 4 26 837799 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 9 3 1 4 1 5 9 2 6 5 10 123456 678910 111213 141516 171819 202122 232425 262728 293031 323334	4 0 14 164 34 60

Note

In the first test case, Busy Beaver only has one number on the blackboard which is the number 3.

- On the first move, Busy Beaver replaces the odd number 3 with $3(3) + 1 = 10$.
- On the second move, Busy Beaver replaces the even number 10 with $\frac{10}{2} = 5$.
- On the third move, Busy Beaver replaces the odd number 5 with $3(5) + 1 = 16$.
- On the fourth move, Busy Beaver replaces the even number 16 with $\frac{16}{2} = 8$.

At this point, Busy Beaver cannot make any moves, so the maximum number of moves is 4.

In the second test case, Busy Beaver cannot make any move since there are no odd numbers on the blackboard.