

Problem F. Make Them Odd

Time limit 3000 ms

Mem limit 262144 kB

There are n positive integers a_1, a_2, \dots, a_n . For the one move you can choose any even value c and divide by two **all** elements that equal c .

For example, if $a = [6, 8, 12, 6, 3, 12]$ and you choose $c = 6$, and a is transformed into $a = [3, 8, 12, 3, 3, 12]$ after the move.

You need to find the minimal number of moves for transforming a to an array of only odd integers (each element shouldn't be divisible by 2).

Input

The first line of the input contains one integer t ($1 \leq t \leq 10^4$) — the number of test cases in the input. Then t test cases follow.

The first line of a test case contains n ($1 \leq n \leq 2 \cdot 10^5$) — the number of integers in the sequence a . The second line contains positive integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^9$).

The sum of n for all test cases in the input doesn't exceed $2 \cdot 10^5$.

Output

For t test cases print the answers in the order of test cases in the input. The answer for the test case is the minimal number of moves needed to make **all** numbers in the test case odd (i.e. not divisible by 2).

Sample 1

Input	Output
4	4
6	10
40 6 40 3 20 1	4
1	0
1024	
4	
2 4 8 16	
3	
3 1 7	

Note

In the first test case of the example, the optimal sequence of moves can be as follows:

- before making moves $a = [40, 6, 40, 3, 20, 1]$;
- choose $c = 6$;
- now $a = [40, 3, 40, 3, 20, 1]$;
- choose $c = 40$;
- now $a = [20, 3, 20, 3, 20, 1]$;
- choose $c = 20$;
- now $a = [10, 3, 10, 3, 10, 1]$;
- choose $c = 10$;
- now $a = [5, 3, 5, 3, 5, 1]$ — all numbers are odd.

Thus, all numbers became odd after 4 moves. In 3 or fewer moves, you cannot make them all odd.