Boxes

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	512 megabytes

You are given n boxes of sizes $a_1, a_2, \ldots, a_n$. All box sizes are powers of two. In a box of size r, you can fit other boxes with a total size not exceeding $\frac{r}{2}$ (and similarly, in these boxes, you can fit other boxes, and so on). A box retains its fixed size regardless of the packing structure inside it.

Your task is to plan how to nest the boxes in such a way that the number of boxes not nested inside anything is minimized.

Input

In the first line of standard input, there is a single integer t ($1 \leq t \leq 500\,000$), indicating the number of test cases. The descriptions of the test cases are given in the next $2t$ lines, and each of these descriptions consists of two lines.

The first line of the test case description contains one integer n ($1 \leq n \leq 100\,000$), indicating the number of boxes.

The second line of the test case description contains a sequence of n integers $a_1, a_2, \ldots, a_n$ ($1 \leq a_i \leq 10^{12}$; a_i are powers of the number 2 with non-negative integer exponents), indicating the sizes of the subsequent boxes.

The sum of the values of n for all test cases will not exceed 500 000.

Output

The output should contain t lines, and each of them should contain one integer. The number in the i-th line should indicate the minimum possible number of outer (i.e., not packed into any other) boxes in the i-th test case.

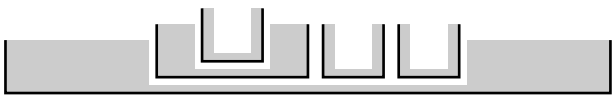
Example

standard input	standard output
4 5 1 2 1 1 8 3 1 1 1 6 1 1 1 4 1 2 3 8 4 2	1 3 3 1

Note

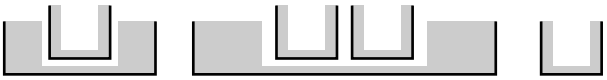
Sample optimal box packings are shown below.

In the first test case:



In the second test case:

In the third test case:



In the fourth test case: