Chicks

There are n hens in a farm. The egg hatching ability of all the hens decreases by 1 day after each time they hatch an egg. (i.e. every hen will hatch the next egg 1 day slower than the time it took to hatch the previous egg)

Let the initial egg hatching ability of Hen[i] be D[i].

- Hen[i] lays it's first egg on D[i]th day.
- Hen[i] lays it's second egg on 2*D[i]+1 th day.
- Hen[i] lays it's thrid egg on 3*D[i]+3rd day.
- Hen[i] lays it's fourth egg on 4*D[i]+6th day.
- Hen[i] lays it's fifth egg on 5*D[i]+10th day.

and so on..

Given **n** - the number of hens and the array **D** - the initial egg hatching ability of the hens, find the minimum number of days required to produce at least **K** eggs. You can safely assume that eggs neither gets damaged nor converted into hens.

Input

The first line consists of integers **t**, the number of test cases. For each test case, the first line consists two integers **n** and **K**. The next line consists of **n** integers representing the initial egg hatching ability of the hens.

Output

For each test case, find the minimum number of days required to produce at least **K** eggs.

Constraints

1 <= t <= 10^2
1 <= n <= 10^3
1 <= K <= 10^8
1 <= D[i] <= 10^8

Example

Sample Input:
3
1 4
1
2 5
2 5
5 1000000
1 2 3 4 5

Sample Output:

10
11
20000500003

Explanation of Test case #2

There are 2 hens and we need to produce 5 eggs

At time 2, Hen 0 lays an egg.

At time 5, Hen 0 and Hen1 lay an egg each.

At time 9, Hen 0 lays an egg

At time 11, Hen1 lays an egg.