8519   Arrangement for Contests

As a sponsor of programming contests, Yu has many factors to consider. Recently, he has found that the difficulties of problems can be a serious factor.

For novices, they may simply ignore the problems that are too hard; and for experts in programming contests, an easy problem almost means nothing. Moreover, if a contest consists of both easy and hard questions, it will not satisfy them — but make them unhappy for both reasons.

Therefore, Yu has come up with an idea: holding different kinds of contests! Novices tend to participant in a contest is known as an easy one, but will not join a hard one.

In details, suppose the difficulty of a problem can be measured as a positive integer, i. The bigger number means that the problem is harder. In Yu's design, a contest consists of several problems with consistent difficulties. Formally, if a contest has k problem, then their difficulties must be i, $i+1$, ..., $i+k-1$. This is because if there are two problems with same difficulties, their functions in the contest will be the same, which is not good; and if two problems have a big gap in difficulties, there will be questions that are mentioned above. Now, a contest with difficulty 1,2,3,4,5 is obviously a simple one, and a contest with 5,6,7,8,9 can be a hard one.

Yu has a large amount of problems, and he measures all the difficulties. Now, he wants to hold as many contests as possible. Do you know how many contests can he hold?

Input

In the first line there is an integer T ($1 \leq T \leq 10$), showing that there are T test cases. Each test case consists of two lines.

For each test case, in the first line are two integers N, K ($1 \leq K \leq N \leq 100,000$), where N means the kinds of difficulties, and K is the number of questions that a contest may have.

In the second line, there are N numbers $a[i]$ ($0 \leq a[i] \leq 10^9$), the i-th indicates the number of questions with difficulty i.

Output

For each test case, the output should be an integer, indicating the maximum number of contests that Yu can hold.

Sample Input

```
3
3 2
1 2 1
6 3
1 5 3 4 7 6
9 4
2 7 1 3 6 5 8 9 4
```

Sample Output

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2
5
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6