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Daanish and Problems

 Problem Code: **DIV03**

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Daanish as always is busy creating and solving his favourite and interesting graph problems. Chef assigns each problem a difficulty — an integer between 1 and 10. For each valid i , there are A_i problems with difficulty i .

A participant hacked Daanish's account and got access to the problem proposal document. He can delete up to K problems from the document in order to reduce the difficulty of the contest for himself and his friends. Find the smallest possible value of the difficulty of the most difficult problem which remains after removing K problems.

Input

- The first line of the input contains a single integer T denoting the number of test cases. The description of T test cases follows.
- The first line of each test case contains 10 space-separated integers A_1, A_2, \dots, A_{10} .
- The second line contains a single integer K .

Output

For each test case, print a single line containing one integer — the minimum difficulty of the most difficult remaining problem.

Constraints

- $1 \leq T \leq 2 \cdot 10^4$
- $0 \leq A_i \leq 10^8$ for each valid i
- $A_1 + A_2 + \dots + A_{10} > 0$
- $0 \leq K < A_1 + A_2 + \dots + A_{10}$

Subtasks

Subtask #1 (100 points): original constraints

Example Input

```
5
1 10 1 5 3 2 4 9 0 100
100
2 0 1 0 0 0 0 0 0 10
12
2 0 1 0 0 0 0 10 0 0
0
2 0 1 0 0 0 0 0 0 10
10
1 10 1 5 3 2 4 9 0 100
125
```

Example Output

```
8
1
8
3
2
```

Explanation

Example case 1: The participant can remove all 100 problems with difficulty 10. Then, there are no problems with difficulties 9 and 10, so the maximum difficulty among remaining problems is 8.

Example case 2: The participant can remove all problems with difficulties 3 and 10 and any one of the problems with difficulty 1. Then, the only problem left has

Submission Ends In

18

45

Min

Sec

My Submissions

All Submissions

Successful Submissions



difficulty 1.

Example case 3: The participant cannot remove any problem. The document does not contain any problems with difficulties 9 or 10, so the maximum difficulty of a problem is 8.

Author: [smit_adm](#)

Date Added: 9-01-2021

Time Limit: 0.5 secs

Source Limit: 50000 Bytes

Languages: CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY, PYP3, TEXT, CPP17, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, kotlin, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D, R, CAML, rust, ASM, FORT, FS, LISP clisp, SQL, swift, SCM guile, PERL6, CLPS, WSPC, ERL, ICK, NICE, PRLG, ICON, PIKE, COB, SCM chicken, SCM qobi, ST, NEM, SQLQ

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