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# Daanish and Problems | Problem Code: DIV03



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  ${\cal K}$  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  ${\cal K}$ problems.

## Input

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

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

## Subtasks

Subtask #1 (100 points): original constraints

## **Example Input**

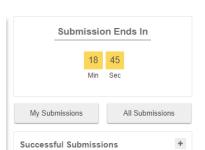
## **Example Output**

8

## **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.

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



difficulty  ${\bf 1}$ 

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

 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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