School of Geometry

Problem Code: **SNUG_FIT**

Submit (Practice)

All submissions for this problem are available.### Read problem statements in Hindi, Bengali, Mandarin Chinese, Russian, and Vietnamese as well.

Once again, we have a lot of requests from coders for a challenging problem on geometry. Geometry expert Nitin is thinking about a problem with parabolas, icosahedrons, crescents and trapezoids, but for now, to encourage beginners, he chooses to work with circles and rectangles.

You are given two sequences $A_1, A_2, \ldots, A_N$ and $B_1, B_2, \ldots, B_N$. You should choose a permutation $P_1, P_2, \ldots, P_N$ of the integers 1 through N and construct N rectangles with dimensions $A_1 \times B_{P_1}, A_2 \times B_{P_2}, \ldots, A_N \times B_{P_N}$. Then, for each of these rectangles, you should construct an inscribed circle, i.e. a circle with

Let S be the sum of diameters of these N circles. Your task is to find the maximum value of S.

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 a single integer N.
- The second line contains N space-separated integers $A_1, A_2, \ldots, A_N$.
- The third line contains N space-separated integers $B_1, B_2, \ldots, B_N$.

Output

For each test case, print a single line containing one integer — the maximum value of S. It is guaranteed that this value is always an integer.

Constraints

- $1 \le T \le 50$
- $1 \le N \le 10^4$
- $1 \le A_i, B_i \le 10^9$ for each valid i

Subtasks

Subtask #1 (20 points):

- $A_1 = A_2 = \ldots = A_N$
- $B_1 = B_2 = \ldots = B_N$

Subtask #2 (80 points): original constraints

Example Input

```
2
4
8 8 10 12
15 20 3 5
3
20 20 20
10 10 10
```

Example Output

```
30
30
```

Explanation

Example case 1: Four rectangles with dimensions 8×3, 8×5, 10×20 and 12×15 lead to an optimal answer.

Author:	4★ sahi1422
Editorial:	https://discuss.codechef.com/problems/SNUG_FIT
Tags:	cakewalk, feb20, geometry, greedy, sahi1422, tmwilliamlin
Date Added:	21-01-2020
Time Limit:	1 secs
Source Limit:	50000 Bytes
Languages:	C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, rust, SCALA, swift, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, SQL, kotlin, PERL6, TEXT, SCM chicken, PYP3, CLOJ, R, COB, FS

Submit (Practice)

All Submissions

Successful Submissions +

Comments ▸