IOI & EGOI Team Selection Test

2025

Feeding the Ninja Turtles

Time limit: 4 seconds	**Memory limit: 512 MB**

In the town of Tichy, there live some very special creatures: the ninja turtles! Each turtle has a positive integer written on its shell. When you feed a turtle a shrimp, the number on its shell changes as follows:

- If the number is greater than 1, it becomes its greatest proper divisor (the largest number smaller than it that divides it).
- If the number is 1, it remains unchanged.

Two friends, Elyas and Iyed, each own a collection of n turtles. They want to pair their turtles into n pairs such that:

- Each pair consists of one turtle from Elyas and one turtle from Iyed.
- Turtles can only be paired if they show the same number on their shells.

Since the turtles are not very sociable, Elyas and Iyed may need to feed their turtles multiple times until suitable pairs can be formed. Feeding a turtle costs one shrimp per operation.

Task

Your task is to find the minimum total number of shrimp feedings needed to pair all turtles.

Input

- First line: an integer n – The number of turtles each friend has ($1 \leq n \leq 10^5$).
- Second line: n integers $a_1, a_2, \ldots, a_n$ – numbers on Iyed's turtles' shells ($1 \leq a_i \leq 10^6$).
- Third line: n integers $b_1, b_2, \ldots, b_n$ – numbers on Elyas' turtles' shells ($1 \leq b_i \leq 10^6$).

It is guaranteed that an answer always exists and fits into a 64-bit integer.

Output

Print a single integer – the minimum number of shrimp feedings required.

Notes

- The proper divisors of a number are the positive integers strictly less than the number that divide it exactly.
- For example, the greatest proper divisor of:
  - 6 is 3
  - 10 is 5
  - 7 is 1 (since 7 is prime)

Example 1

Input 1

```
5
1 7 4 3 2
7 3 2 4 1
```

Output 1

```
0
```

Explanation 1

The turtles can already be paired without feeding:

- 1 (Iyed) with 1 (Elyas)
- 7 (Iyed) with 7 (Elyas)
- 4 (Iyed) with 4 (Elyas)
- 3 (Iyed) with 3 (Elyas)
- 2 (Iyed) with 2 (Elyas)

No shrimp feedings are needed!

Example 2

Input 2

```
3
8 6 7
14 9 7
```

Output 2

```
7
```

Explanation 2

Several feedings are needed:

- Feed turtle 8 three times: $8 \to 4 \to 2 \to 1$
- Feed turtle 6 one time: $6 \to 3$
- Do not feed turtle 7
- Feed turtle 14 one time: $14 \to 7$
- Feed turtle 9 one time: $9 \to 3$
- Feed turtle 7 one time: $7 \to 1$

After feedings:

- Iyed's turtles: 1, 3, 7
- Elyas's turtles: 7, 3, 1

They can now be paired. Total shrimp feedings used: $3 + 1 + 0 + 1 + 1 + 1 = 7$.

Subtasks

Subtask	Points	Constraints
1	8	$n \leq 8$
2	12	All numbers are prime or 1
3	10	All numbers are powers of 2
4	40	$n \leq 700$
5	30	No constraints