CALENDAR HOME RATING HELP TOP CATALOG CONTESTS GYM **PROBLEMSET GROUPS** EDU API

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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS HACKS ROOM STANDINGS CUSTOM INVOCATION

C. Gellyfish and Flaming Peony

time limit per test: 2 seconds memory limit per test: 512 megabytes

Gellyfish hates math problems, but she has to finish her math homework:

Gellyfish is given an array of n positive integers a_1, a_2, \ldots, a_n .

She needs to do the following two-step operation until all elements of a are equal:

- 1. Select two indexes i, j satisfying $1 \le i, j \le n$ and $i \ne j$.
- 2. Replace a_i with $gcd(a_i, a_i)$.

Now, Gellyfish asks you for the minimum number of operations to achieve her goal.

It can be proven that Gellyfish can always achieve her goal.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 5000$). The description of the test cases follows.

The first line of each test case contains a single integer n ($1 \le n \le 5000$) — the length of the array.

The second line of each test case contains n integers a_1, a_2, \ldots, a_n $(1 \le a_i \le 5000)$ — the elements of the array.

It is guaranteed that the sum of n over all test cases does not exceed 5000.

Output

For each test case, output a single integer — the minimum number of operations to achieve her goal.

Example

```
input
3
12 20 30
191981
6 14 15
output
4
3
3
```

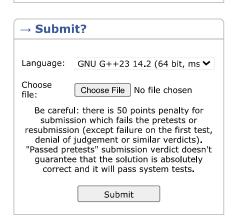
Note

In the first test case, the following is a way that minimizes the number of operations:

- 1. Choose i=3 and j=2 and replace a_3 with $\gcd(a_3,a_2)=\gcd(30,20)=10$, then abecomes [12, 20, 10].
- 2. Choose i=1 and j=3 and replace a_1 with $\gcd(a_1,a_3)=\gcd(12,10)=2$, then abecomes [2, 20, 10].
- 3. Choose i=2 and j=1 and replace a_2 with $\gcd(a_2,a_1)=\gcd(20,2)=2$, then abecomes [2, 2, 10].
- 4. Choose i=3 and j=1 and replace a_3 with $\gcd(a_3,a_1)=\gcd(10,2)=2$, then abecomes [2, 2, 2].



Codeforces Round 1028 (Div. 2) Contest is running 00:03:09 Contestant



→ Last submissions		
Submission	Time	Verdict
322291312	May/31/2025 19:30	Pretests passed
322289149	May/31/2025 19:27	Wrong answer on pretest 9
322286761	May/31/2025 19:23	Wrong answer on pretest 9
322284692	May/31/2025 19:20	Wrong answer on pretest 9
322283273	May/31/2025 19:18	Wrong answer on pretest 9
322274993	May/31/2025 19:05	Wrong answer on pretest 9
322273138	May/31/2025 19:02	Wrong answer on pretest 9
322223162	May/31/2025 18:03	Wrong answer on pretest 9
322219070	May/31/2025 17:59	Wrong answer on pretest 9
322215512	May/31/2025 17:56	Wrong answer on pretest 9

→ Score table		
	Score	
<u>Problem A</u>	268	
<u>Problem B</u>	402	
<u>Problem C</u>	670	
<u>Problem D</u>	1072	
<u>Problem E</u>	1340	
<u>Problem F</u>	1608	
Successful hack	100	
Unsuccessful hack	-50	
Unsuccessful submission	-50	
Resubmission	-50	

^{*} If you solve problem on 01:56 from the first attempt

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