

# GCD Groups

Gukiz has an easy task for you:

You are given an array  $a$  of even length  $n$ . We want to split it into two disjoint groups with  $\frac{n}{2}$  elements each, so that the Greatest Common Divisor (GCD) of all numbers in each group is greater than  $1$ . Is this possible?

**Note:** A disjoint group means that each element of array  $a$  is located in exactly one group.

## Input Format

The first line of the input contains a single integer  $T$ , denoting the number of test cases.

The first line of each testcase contains one even number  $n$ : the length of the array in the testcase.

The second line of each testcase contains  $n$  separated integers  $a_1, a_2, \dots, a_n$ , representing array  $a$ .

## Constraints:

$$\begin{aligned} 1 \leq T &\leq 10 \\ 1 \leq n &\leq 5 \cdot 10^5 \\ 1 \leq a_i &\leq 5 \cdot 10^5 \\ 1 \leq Sum(n) &\leq 10^6 \end{aligned}$$

*Note:* The scoring for this problem is *binary*. You have to pass all the test-cases to get a positive score.

## Output Format

For each testcase, print a single line "YES" (without the quotes) if it is possible to make a split with the aforementioned described properties. If it's not possible, print a single line "NO".

## Sample Input:

```
2
6
8 10 24 20 45 30
2
25 1
```

## Sample Output:

```
YES
NO
```

## Explanation

The number of testcases is **2**.

In the first testcase, we have an array of length 6. We can split the array into 2 sets with **3** elements. One possible way:

- 1.  $\{8, 24, 20\}$   $GCD = 4$     Valid because  $GCD(8, 24, 20) > 1$
- 2.  $\{10, 45, 30\}$   $GCD = 5$     Valid because  $GCD(10, 45, 30) > 1$

There are many other ways to split this.

In the second testcase, we have an array with **2** elements. The only way to split it into groups with sizes  $\frac{n}{2}$  is to make 2 groups with 1 element each. So, 1 group will contain the number **1** only, and its GCD will be equal to **1**. So, the answer is "NO".