



Non-Divisible Subset

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Problem

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Given a set, S , of n distinct integers, print the size of a maximal subset, S' , of S where the sum of any 2 numbers in S' is *not* evenly divisible by k .

Input Format

The first line contains 2 space-separated integers, n and k , respectively.

The second line contains n space-separated integers (we'll refer to the i^{th} value as a_i) describing the unique values of the set.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq k \leq 100$
- $1 \leq a_i \leq 10^9$
- All of the given numbers are distinct.

Output Format

Print the size of the largest possible subset (S').

Sample Input

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

Sample Output

```
3
```

Explanation

The largest possible subset of integers is $S' = \{1, 7, 4\}$, because no two integers will have a sum that is evenly divisible by $k = 3$:

- $1 + 7 = 8$, and 8 is not evenly divisible by 3.
- $1 + 4 = 5$, and 5 is not evenly divisible by 3.
- $7 + 4 = 11$, and 11 is not evenly divisible by 3.

The number 2 cannot be included in our subset because it will produce an integer that is evenly divisible by $k = 3$ when summed with any of the other integers in our set:

- $1 + 2 = 3$, and $\frac{3}{3} = 1$ (remainder 0).
- $4 + 2 = 6$, and $\frac{6}{3} = 2$ (remainder 0).
- $7 + 2 = 9$, and $\frac{9}{3} = 3$ (remainder 0).

Thus, we print the length of S' on a new line, which is **3**.

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Max Score: 20

Difficulty: Medium

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Java 7  

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
9     public static void main(String[] args) {
10         /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
11     }
12 }
```

Line: 1 Col: 1

 [Upload Code as File](#)☐ Test against custom input

Run Code

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