

Hablu and Bablu

Hablu is a hardworking programmer. He solves lots of easy problems everyday :P. **Hablu's** teammate **Bablu** is busy with studies, so amount of solved by him is smaller than **Hablu's**.

Their coach **NannaMia** noticed the fact that the number of solved problems by **Hablu** is a multiple of number of solved problems by **Bablu**.

Then **NannaMia** asked **Hablu** a question. Giving a collection of integers S, **NannaMia** said that the number of solved problems by **Bablu** is not a multiple of any integer contained in S (S only contains primes or 1). How many valid integers are there which could be the number of problems solved by **Bablu**.

As **Hablu** solves only easy problems, he is unable to solve this one. So, you need to help him :)

Input

The first line contains t, number of test cases ($t \leq 1500$).

Each case starts with an integer H, the number of problems solved by **Hablu** and K, the size of the collection S. The next line contains K space separated integers (the members of S).

Remember that the online judge in which they solve has only(!) 10^{12} problems. So no number will be greater than 10^{12} . And K will be between 0 and 500.

Output

Print a line for each test case containing the number of possible integers which can be the number of solved problems by **Bablu**.

Example

Input:

```
1
58 2
2 3
```

Output:

```
2
```

Note : May be it's impossible to pass the time limit in several languages.