The Royal Canadian Mint has commissioned a new series of designer coffee tables, with legs that are constructed from stacks of coins. Each table has four legs, each of which uses a different type of coin. For example, one leg might be a stack of quarters, another nickels, another loonies, and another twonies. Each leg must be exactly the same length.

Many coins are available for these tables, including foreign and special commemorative coins. Given an inventory of available coins and a desired table height, compute the lengths nearest to the desired height for which four legs of equal length may be constructed using a different coin for each leg.

Input

Input consists of several test cases. Each case begins with an integers: $4 \leq n \leq 50$ giving the number of types of coins available, and $1 \leq t \leq 10$ giving the number of tables to be designed. n lines follow; each gives the thickness of a coin in hundredths of millimetres. t lines follow; each gives the height of a table to be designed (also in hundredths of millimetres). A line containing '`0 0`' follows the last test case.

Output

< limit

For each table, output a line with two integers: the greatest leg length not exceeding the desired length, and the smallest leg length not less than the desired length.

> limit

The Royal Canadian Mint produces Canada's circulation coins

Sample Input

```
4 2
50
100
200
400
1000
2000
0 0
```

coin-type noOf-table
thickness [coin]
height [table]

Sample Output

```
800 1200
2000 2000
```

lower-limit upper-limit
lcd of coin (common interest)

Category: math or number theory