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Between Two Sets

by [zemen](#)

Problem

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Consider two sets of positive integers, $A = \{a_0, a_1, \dots, a_{n-1}\}$ and $B = \{b_0, b_1, \dots, b_{m-1}\}$. We say that a positive integer, x , is *between* sets A and B if the following conditions are satisfied:

1. All elements in A are factors of x .
2. x is a factor of all elements in B .

In other words, some x is *between* A and B if that value of x satisfies $x \bmod a_i = 0$ for every a_i in A and also satisfies $b_i \bmod x = 0$ for every b_i in B . For example, if $A = \{2, 6\}$ and $B = \{12\}$, then our possible x values are **6** and **12**.

Given A and B , find and print the number of integers (i.e., possible x 's) that are *between* the two sets.

Input Format

The first line contains two space-separated integers describing the respective values of n (the number of elements in set A) and m (the number of elements in set B).

The second line contains n distinct space-separated integers describing a_0, a_1, \dots, a_{n-1} .

The third line contains m distinct space-separated integers describing b_0, b_1, \dots, b_{m-1} .

Constraints

- $1 \leq n, m \leq 10$
- $1 \leq a_i \leq 100$
- $1 \leq b_i \leq 100$

Output Format

Print the number of integers that are considered to be *between* A and B .

Sample Input

```
2 3
2 4
16 32 96
```

Sample Output

```
3
```

Explanation

There are three x values *between* $A = \{2, 4\}$ and $B = \{16, 32, 96\}$:

- $x = 4$:
 - All the elements in A evenly divide $x = 4$.
 - $x = 4$ evenly divides all the elements in B .

- $x = 8$:
 - All the elements in A evenly divide $x = 8$.
 - $x = 8$ evenly divides all the elements in B .
- $x = 16$:
 - All the elements in A evenly divide $x = 16$.
 - $x = 16$ evenly divides all the elements in B .

Thus, we print **3** as our answer.

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Max Score: 10

Difficulty: Easy

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Python 3  

```
1 #!/bin/python3
2
3 import sys
4
5 def getTotalX(a, b):
6     # Complete this function
7
8 if __name__ == "__main__":
9     n, m = input().strip().split(' ')
10    n, m = [int(n), int(m)]
11    a = list(map(int, input().strip().split(' ')))
12    b = list(map(int, input().strip().split(' ')))
13    total = getTotalX(a, b)
14    print(total)
15
```

Line: 1 Col: 1

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

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