

COCI '17 Contest 6 #5 Kotrljanje

Time limit: 2.0s **Memory limit:** 64M

Vla-tko, Vla-tko, Vla-tko!

Nobody comes to Vlatko's office hours anymore. Angered, enraged and disgruntled, Vlatko's revenge is a convenient task for COCI:

You are given an infinite arithmetic sequence $A(n) = Cn + D$, defined for all natural numbers n . We want to find a sequence of M distinct natural numbers n_1, n_2, \dots, n_M less than or equal to 10^{15} such that the corresponding members of sequence $A(n_1), A(n_2), \dots, A(n_M)$ all have the same sum of digits in base B .

Please note: Every positive integer N can be written in base B as follows: create the unique string $x_k x_{k-1} \dots x_1 x_0$, where $0 \leq x_i < B$ for each i , and the equation $x_k B^k + x_{k-1} B^{k-1} + \dots + x_1 B + x_0 = N$ is satisfied. The sum of digits is given with $x_k + \dots + x_0$.

Input Specification

The first line of input contains four integers C, D, B and M ($1 \leq C, D \leq 10\,000, 2 \leq B \leq 5\,000, 1 \leq M \leq 250\,000$).

Output Specification

The first and only line of output must contain the required numbers, separated by spaces, in an arbitrary order.

Please note: you must output the numbers n_i , not numbers $A(n_i)$. All numbers in the output should be less than or equal to 10^{15} .

The input data will be such that a solution that meets the given conditions exists.

Sample Input 1

```
5 3 2 2
```

Sample Output 1

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2 5
```

Explanation for Sample Output 1

One of the possible sequences is the sequence in the output. The corresponding members of the arithmetic sequence are $5 \times 2 + 3 = 13$ and $5 \times 5 + 3 = 28$. The format of number 13 in base 2 is 1101, whereas the format of number 28 in base 2 is 11100. The sum of digits in both formats is equal to 3.

Sample Input 2

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2 1 10 3
```

Sample Output 2

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2 20 200
```

Explanation for Sample Output 2

The corresponding members of the sequence are $2 \times 2 + 1 = 5$, $2 \times 20 + 1 = 41$, and $2 \times 200 + 1 = 401$. Each of the numbers' digits, written in base 10, sum up to 5.