Problem A. Square Kingdom

In the Square Kingdom, n residents numbered from 1 to n live alone on top of a tall stone pillar. The height of the pillar for the i-th resident is $\left(i + \frac{b}{a}\right)^2$ units above the ground.

Since everyone lives so high up, the only way to visit a neighbor is by using a ladder. The kingdom builds one ladder for every pair of residents. The length of each ladder is exactly the absolute difference in height between the two pillars it connects.

With $\frac{n(n-1)}{2}$ ladders in total, it becomes hard to manage them all. You are asked for the length of the k-th ladder in ascending order of length. This information will help the kingdom plan repairs, deliveries, and community events.

Input

The only line contains four integers n ($2 \le n \le 10^{12}$), k ($1 \le k \le \min\left\{\frac{n(n-1)}{2}, 10^{12}\right\}$), a ($1 \le a \le 10^6$), and b ($0 \le b \le 10^{12}$).

Output

Output a line containing two integers p and q, denoting that the length of the k-th ladder in ascending order of length can be represented as $\frac{p}{q}$ with two integers p and q ($p \ge 0$, $q \ge 1$, $\gcd(p, q) = 1$), where $\gcd(p, q)$ is the greatest common divisor of p and q.

Examples

standard input
3 1 3 1
standard output
11 3

standard input
3 2 3 1
standard output
17 3

standard input
3 3 3 1
standard output
28 3

standard input
1414215 1000000000000 1000000 1000000000000
standard output
4823373069559 1

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