Magus Night

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

Marisa Kirisame has been collecting Supernatural Beads. Now she has got n Beads, and she wants to use them to perform her representative magic, Master Spark.

When she prepares to perform magic, the Beads will be energized. Formally, each of the Beads will get an integer in $[1, m]$ as its *energy*, completely **randomly** and **independently**. Note that the *energy* of a Bead may change when she repeats energizing.

After some practising, she finds a few interesting facts about her Beads. Assume that the *energy* of the Beads is $s_1, s_2, \ldots, s_n$, then the *power* of the magic is $\text{lcm}(s_1, s_2, \ldots, s_n)$, and the *cost* of the magic is $\gcd(s_1, s_2, \ldots, s_n)$. Here $\text{lcm}(s_1, s_2, \ldots, s_n)$ denotes the *Least Common Multiple (LCM)* of integers $s_1, s_2, \ldots, s_n$, and $\gcd(s_1, s_2, \ldots, s_n)$ denotes the *Greatest Common Divisor (GCD)* of integers $s_1, s_2, \ldots, s_n$.

Marisa is strict about magic. She sets two positive integers p and q no greater than m, and she regards a magic *successful* if and only if the *power* of the magic is **no less** than p and the *cost* of the magic is **no greater** than q. She thinks the *value* of a magic is $\prod_{i=1}^{n} s_i$ if the magic is *successful*, and 0 otherwise.

Now she wonders about the expected *value* of magic. Let the answer be x, it is obvious that $x \cdot m^n$ is an integer. As this number may be large, you only need to tell her $x \cdot m^n \bmod 998244353$.

Input

The only line of the input contains four integers, n, m, p, and q — the number of the Beads, the maximum possible *energy* of the Beads and the two parameters on defining *successful* magics.

It is guaranteed that $1 \le n \le 998244351$ and $1 \le p, q \le m \le 2 \times 10^5$.

Output

The only line of the output contains a single integer in $[0, 998244353)$ — the expected *value* of a magic, that is, $x \cdot m^n$ in the last paragraph of the statement.

Examples

standard input	standard output
2 4 3 2	66
7 2 1 2	2187

Note

In the first example, there are 16 possible situations, and the *successful* ones are listed below:

$\{1, 3\}$, $\{1, 4\}$, $\{2, 3\}$, $\{2, 4\}$, $\{3, 1\}$, $\{3, 2\}$, $\{3, 4\}$, $\{4, 1\}$, $\{4, 2\}$, $\{4, 3\}$.

Those situations are not *successful*, for their *power* is less than 3:

$\{1, 1\}$, $\{1, 2\}$, $\{2, 1\}$, $\{2, 2\}$.

Those situations are not *successful*, for their *cost* is more than 2:

$\{3, 3\}$, $\{4, 4\}$.

In the second example, it is obvious that all 2^7 situations are *successful*.