Counting linear congruential generators

We are interested in the number of linear congruential generators of the form $x_{i+1}=(Ax_i+C) \bmod M$ with good properties (i.e., the length of the period is maximal possible).

The task

Consider that each of the parameters A, C, M is bounded from below and from above by given values. Count the number of linear congruential generators fulfilling:

- M has at least D divisors (for some given integer D)
- C and M are coprimes
- A-1 is divisible by each prime factor of M
- if 4 divides M then also 4 divides A-1

Note that two linear congruential generators are different if they differ in at least one of their parameters.

Input

The input consists of four lines. The first line contains integers A_{min}, A_{max}. The second line contains integers C_{min}, C_{max}. The third line contains integers M_{min}, M_{max}. Each pair of integers is separated by a space. The fourth line contains integer D.

Values of A_{max}, C_{max} and M_{max} are not greater than 4×10^7. Moreover, $1 \leq A_{min} \leq A_{max}$, $1 \leq C_{min} \leq C_{max}$, $2 \leq M_{min} \leq M_{max}$ and $2 \leq D \leq M_{max}$.

Output

The output is one line containing one integer - the number of feasible linear congruential generators $x_{i+1}=(Ax_i+C) \bmod M$ where $A_{min} \leq A \leq A_{max}$, $C_{min} \leq C \leq C_{max}$ and $M_{min} \leq M \leq M_{max}$. The resulting number is not greater than 2^{40}.

Example 1

Input

```
1 3
1 3
3 4
2
```

Output

```
4
```

There are four solutions:
A=1, C=1, M=3
A=1, C=2, M=3
A=1, C=1, M=4
A=1, C=3, M=4

Example 2

Input

```
2 5
6 6
5 9
2
```

Output

```
0
```

There is no solution for the given parameters ranges.

Example 3

Input

```
3 7
3 5
8 12
4
```

Output

```
2
```

There are two solutions:
A=5, C=3, M=8
A=5, C=5, M=8

Public data

The public data set is intended for easier debugging and approximate program correctness checking. The public data set is stored also in the upload system and each time a student submits a solution it is run on the public dataset and the program output to stdout and stderr is available to him/her.
Link to public data set