F - Sum of Digits (hard version)

Description

The only difference between easy and hard versions is constraints of k.

We define $s(x)$ as the sum of digits of x in decimalism.

Given four integers d, k, L, R, your task is to calculate the number of k-dimension vector a, which satisfies

$$L \le a_i \le R, \sum_{i=1}^{k} s(a_i) \equiv s(\sum_{i=1}^{k} a_i) \pmod{d}.$$

Input

The input contains four integers d, k, L, R $(1 \le L \le R \le 10^{18}, 2 \le k \le 10, 1 \le d \le 9)$ in four lines.

Output

Output one integers in one line --- the number of k-dimension vector a module $10^9 + 7$.

Sample

Input
4 4 2 12
Output
1338

Input
5 5 853240332453120 97312749740519040
Output
221778589