

A student called Slon is very mischievous in school. He is always bored in class and he is always making a mess. The teacher wanted to calm him down and “tame” him, so he has given him a difficult mathematical problem.

The teacher gives Slon an arithmetic expression A , the integer P and M . Slon has to answer the following question: “What is the **minimal non-negative** value of variable x in expression A so that the remainder of dividing A with M is equal to P ?”. The solution will always **exist**.

Additionally, it will hold that, if we apply the **laws of distribution** on expression A , variable x will not multiply variable x (formally, the expression is a polynomial of the first degree in variable x).

Examples of valid expressions A : $5 + x * (3 + 2)$, $x + 3 * x + 4 * (5 + 3 * (2 + x - 2 * x))$.

Examples of invalid expressions A : $5 * (3 + x * (3 + x))$, $x * (x + x * (1 + x))$.

INPUT

The first line of input contains the expression A ($1 \leq |A| \leq 100\,000$).

The second line of input contains two integers P ($0 \leq P \leq M - 1$) i M ($1 \leq M \leq 1\,000\,000$).

The arithmetic expression A will only consists of characters $+$, $-$, $*$, $($, $)$, x and digits from 0 to 9.

The brackets will always be paired, the operators $+$, $-$ and $*$ will always be applied to exactly two values (there will not be an expression (-5) or $(4+-5)$) and all multiplications will be explicit (there will not be an expression $4(5)$ or $2(x)$).

OUTPUT

The first and only line of output must contain the minimal non-negative value of variable x .

SAMPLE TESTS

input 5+3+x 9 10 output 1	input 20+3+x 0 5 output 2	input 3* (x+ (x+4) *5) 1 7 output 1
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Clarification of the first example: The remainder of dividing $5 + 3 + x$ with 10 for $x = 0$ is 8, and the remainder of division for $x = 1$ is 9, which is the solution.