

Bit Array



You are given four integers: N , S , P , Q . You will use them in order to create the sequence a with the following pseudo-code.

```
a[0] = S (modulo  $2^{31}$ )  
for i = 1 to N-1  
    a[i] = a[i-1]*P+Q (modulo  $2^{31}$ )
```

Your task is to calculate the number of distinct integers in the sequence a .

Input Format

Four space separated integers on a single line, N , S , P , and Q respectively.

Output Format

A single integer that denotes the number of distinct integers in the sequence a .

Constraints

$$1 \leq N \leq 10^8$$
$$0 \leq S, P, Q < 2^{31}$$

Sample Input

```
3 1 1 1
```

Sample Output

```
3
```

Explanation

$$a = [1, 2, 3]$$

Hence, there are **3** different integers in the sequence.