# 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.