Geometric series have many important roles in mathematics. An infinite geometric series that has a positive integer as first term and whose general ratio is a non-negative rational number can be written as follows:

$$a + a\left(\frac{p}{q}\right) + a\left(\frac{p}{q}\right)^2 + a\left(\frac{p}{q}\right)^3 + a\left(\frac{p}{q}\right)^4 + \ldots \text{ to } \infty$$

Here a is the first term of geometric series and p and q are non negative integer numbers.

Infinite geometric series converges when the general ratio is less than 1 and diverges when the general ratio is greater than or equal to 1. In other words converging infinite geometric series has summation less than infinity. But for this problem, a converging geometric series is a series whose sum does not exceed a given value, as "less than infinity" does not indicate any specific value. We refer this given value as $NEXT\_TO\_NEVER$ in this problem. So given the value of $NEXT\_TO\_NEVER$ and a, your job is to find out how many different fractions $\left(\frac{p}{q}\right)$ are there so that the series remain convergent (Summation not exceeding $NEXT\_TO\_NEVER$).

Input

Input file contains less than 550 sets of inputs. The description for each set is given below:

The input for each set is given in a single line. This line contains three integers $NEXT\_TO\_NEVER$ ($1000 \leq NEXT\_TO\_NEVER \leq 10000$), a ($1 \leq a \leq 5$) and $MAXV$ ($20000 \leq MAXV \leq 100000$). Meaning of $NEXT\_TO\_NEVER$ and a is already given in the problem statement. The value $MAXV$ indicates the maximum possible value of p and q. Note that the minimum possible value for p and q is 0 (zero) and 1 (One) respectively.

Input is terminated by a line containing three zeroes.

Output

For each line of input produce one line of output. This line contains the serial of output followed by two integers s and t. The first integer s denotes how many different possible fractions $\left(\frac{p}{q}\right)$, are there considering p and q are relative prime. The second integer t denotes how many different possible fractions $\left(\frac{p}{q}\right)$ are there considering p and q may or may not be relative primes. Look at the output for sample input for details.

Sample Input

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1000 1 20000
0 0 0
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Sample Output

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Case 1: 121468930 199820000
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