

E. Valera and Number

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Valera is a coder. Recently he wrote a funny program. The pseudo code for this program is given below:

```
//input: integers x, k, p
a = x;
for(step = 1; step <= k; step = step + 1){
    rnd = [random integer from 1 to 100];
    if(rnd <= p)
        a = a * 2;
    else
        a = a + 1;
}

s = 0;

while(remainder after dividing a by 2 equals 0){
    a = a / 2;
    s = s + 1;
}
```

Now Valera wonders: given the values x , k and p , what is the expected value of the resulting number s ?

Input

The first line of the input contains three integers x , k , p ($1 \leq x \leq 10^9$; $1 \leq k \leq 200$; $0 \leq p \leq 100$).

Output

Print the required expected value. Your answer will be considered correct if the absolute or relative error doesn't exceed 10^{-6} .

Examples

input
1 1 50
output
1.000000000000000

input
5 3 0
output
3.000000000000000

input
5 3 25
output
1.921875000000000

Note

If the concept of expected value is new to you, you can read about it by the link:

http://en.wikipedia.org/wiki/Expected_value