

## 6361 Candy

LazyChild is a lazy child who likes candy very much. Despite being very young, he has two large candy boxes, each contains  $n$  candies initially. Everyday he chooses one box and open it. He chooses the first box with probability  $p$  and the second box with probability  $(1 - p)$ . For the chosen box, if there are still candies in it, he eats one of them; otherwise, he will be sad and then open the other box.

He has been eating one candy a day for several days. But one day, when opening a box, he finds no candy left. Before opening the other box, he wants to know the expected number of candies left in the other box. Can you help him?

### Input

There are several test cases.

For each test case, there is a single line containing an integer  $n$  ( $1 \leq n \leq 2 \times 10^5$ ) and a real number  $p$  ( $0 \leq p \leq 1$ , with 6 digits after the decimal).

Input is terminated by EOF.

### Output

For each test case, output one line 'Case  $X$ :  $Y$ ' where  $X$  is the test case number (starting from 1) and  $Y$  is a real number indicating the desired answer.

Any answer with an absolute error less than or equal to  $10^{-4}$  would be accepted.

### Sample Input

```
10 0.400000
100 0.500000
124 0.432650
325 0.325100
532 0.487520
2276 0.720000
```

### Sample Output

```
Case 1: 3.528175
Case 2: 10.326044
Case 3: 28.861945
Case 4: 167.965476
Case 5: 32.601816
Case 6: 1390.500000
```