Given is an alphabet $\{0, 1, \ldots, k\}$, $0 \leq k \leq 9$. We say that a word of length n over this alphabet *tight* if any two neighbour digits in the word do not differ by more than 1.

Input

Input is a sequence of lines, each line contains two integer numbers k and n, $1 \leq n \leq 100$.

Output

For each line of input, output the percentage of tight words of length n over the alphabet $\{0, 1, ..., k$ with 5 fractional digits.

Sample Input

```
4 1
2 5
3 5
8 7
```

Sample Output

```
100.00000
40.74074
17.38281
0.10130
```