

# 837. New 21 Game

## Description

Alice plays the following game, loosely based on the card game "21".

Alice starts with  $0$  points and draws numbers while she has less than  $k$  points. During each draw, she gains an integer number of points randomly from the range  $[1, \text{maxPts}]$ , where  $\text{maxPts}$  is an integer. Each draw is independent and the outcomes have equal probabilities.

Alice stops drawing numbers when she gets  $k$  or more points .

Return the probability that Alice has  $n$  or fewer points.

Answers within  $10^{-5}$  of the actual answer are considered accepted.

### Example 1:

**Input:**  $n = 10, k = 1, \text{maxPts} = 10$   
**Output:** 1.00000  
**Explanation:** Alice gets a single card, then stops.

### Example 2:

**Input:**  $n = 6, k = 1, \text{maxPts} = 10$   
**Output:** 0.60000  
**Explanation:** Alice gets a single card, then stops.  
In 6 out of 10 possibilities, she is at or below 6 points.

### Example 3:

**Input:**  $n = 21, k = 17, \text{maxPts} = 10$   
**Output:** 0.73278

### Constraints:

- $0 \leq k \leq n \leq 10^4$
- $1 \leq \text{maxPts} \leq 10^4$

