Ques. 1:

Harry gave a string *S* to Siri. It is *L* characters long and consists of only *x*'s and *y*'s. Now he asks: Given an integer *N*, I'll pick two indices *i* and *j* at random between *1* and *L*, both inclusive. What is the probability that both *S[i]* and *S[j]* are *x* and $|i-j|<=N$?

Test case 1:

L = 4
N = 3
S = xyxx
Output : 9/16

Test case 2:

L = 4
N = 1
S = xyxx
Output : 5/16

Ques. 2:

A *M* meter rope must be cut in two pieces. It can only be cut at certain places, where it was originally joined with smaller ropes. If the two cut locations are chosen at random (each potential location has equal probability of being chosen), find the probability of a resulting rope being longer than T meters.

Constraints:

- Cut location must be between 1 to M/2 points, inclusive
- Each point must be between 1 to M-1, inclusive.
- Cut locations can not contain duplicate positions.
- T will be between 1 to M, inclusive.

Test case 1:

M = 100

Cut locations = {25,50,75}

T = 25

Output: 1

Test case 2:

M = 100

Cut locations = {25,50,75}

T = 50

Output = 0