

**Saint Bonaventure University
Twenty-First Annual Invitational
High School Programming Contest
February 27, 2009**

Problem 6: World Series Odds

Overview

Every year, a seemingly countless number of series of games are played as teams compete for various championships in various leagues. Multiple games are played because it has somehow been decided that this is a better test of a champion than playing a single game. The purpose of this problem is to determine the degree to which the aforementioned supposition is true.

Problem

In this problem you will be told the number of games that are necessary for a team to win (in order to win the series). You will then be told the probability that “our team” will win a given game. From these two numbers, you are to determine the probability (to three or more decimal places) that our team will win the series. [Note that if it takes only one game to win the series, this means that answer is the same as the second input.] All games are assumed to be independent of each other.

Input

The input will consist of two numbers, N and p . N will come first and will be an integer between 1 and 21 (inclusive) indicating how many games a team must win in order to win the series. p will be a decimal number between 0.0 and 1.0 (inclusive) indicating the probability that our team wins each game.

Output

The output consists of a single line of text stating the probability that our team wins the series. It is to be formatted as in the examples with the exception that the probability may be shown to a different degree of precision as long as the number shown correctly rounds to three decimal places.

Example 1

Input

4 0.4

Output (actual probability = 0.289792)

Probability of winning the series: 0.290

Example 2

Input

1 0.356

Output

Probability of winning the series: 0.356

Example 3

Input

9 0.5

Output (note that 0.5 rounds to 0.500, so this is okay)

Probability of winning the series: 0.5