

Nadal or Djokovic? Who is the best one?

The two most famous tennis players,  $A$  and  $B$ , are facing each other in up to  $2n - 1$  matches. The one who wins  $n$  matches will be the best player in the world. We suppose the result of each game doesn't depend on the rest, and there is a constant likelihood,  $p$ , of  $A$  to win a match. Draw is an invalid result. Which is in advance the probability of  $A$  to win the title?

## Input

The first line of the input contains an integer,  $t$ , indicating the number of test cases. For each test case, two lines appear, the first one contains a number  $n$ ,  $1 \leq n \leq 25$ , representing the number of wins  $A$  has to reach. The second line contains a number  $p$ ,  $0 \leq p \leq 1$ , representing the probability of  $A$  to win a match.

## Output

For each test case the output should contain a single line with the number representing the probability in advance of  $A$  to win the title of best player in the world.

## Sample Input

```
5
25
0.5
25
0.4
25
0.6
15
0.8
10
0.95
```

## Sample Output

```
0.50
0.08
0.92
1.00
1.00
```