Atharva and Chicken

Filename: `chicken`

There is one thing about Atharva that everyone knows: Atharva loves chicken! Any mention of chicken gets Atharva incredibly excited. One of his favorite chicken-containing things is the Chick-fil-A chicken sandwich.

However, Atharva is cursed: even though he specifically asks for "no pickles" every time he orders, his sandwich comes with pickles with probability p! This bothers Atharva so much that, despite his love of chicken, after this happens he stays away from Chick-fil-A for d days (including the day he gets pickles).

For example, if $d = 2$ and Atharva's sandwich has pickles on day 6, Atharva will first come back on day 8. Additionally, if there are pickles on Atharva's sandwich, the number of pickles on the sandwich is equiprobably 1, 2, or 3. Atharva goes to Chick-fil-A at most once per day – and unless he has recently gotten pickles he is guaranteed to go to Chick-fil-A every day.

Due to uncontrollable circumstances, every semester d and p change, and sometimes the semester is longer or shorter. This impacts the expected number of pickles Atharva will get in that semester.

The Problem:

Given how many days in the semester, how many days Atharva will stay away from Chick-fil-A when he gets pickles, and the probability of getting pickles on his sandwich each time, determine the expected total number of pickles Atharva will see on his sandwiches all semester.

The Input:

The first line of input contains a single, positive integer, t, representing the number of semesters to process. Each semester will be contained on a new line and will consist of two, positive integers, n ($n \leq 100{,}000$) and d ($d \leq n$), representing the number of days in the semester, and the number of days Atharva will stay away if he gets pickles, respectively, followed by a real number, p ($0 \leq p \leq 1$), representing the probability of getting some amount of pickles on his sandwich.

The Output:

For each semester, output a single real number, e, representing the expected total number of pickles Atharva will find on his sandwiches in the semester. Your answer will be accepted if it is within either 10^{-6} or 0.0001% of the right answer.

Sample Input:

```
2
3 1 1
1000 3 0.1337
```

Sample Output:

```
6
211.04988585090663
```