Bag of peanuts **P65688_en**

Catorzè Concurs de Programació de la UPC - Semifinal (2016-06-29)

You have several peanuts inside a bag. Before you start eating some of them, you decide that you will eat exactly t peanuts in total. Repeatedly, you will take a peanut at random from the bag, and eat it. However, it happens that some of the peanuts are not complete, but just a half-peanut. Therefore, it is possible that you will not eat exactly t peanuts.

For instance, suppose that the bag has $c = 1$ complete peanuts, $h = 2$ half-peanuts, and that you want to eat exactly one peanut (that is, $t = 1$). In this case, with probability $1/3$ you will eat the complete peanut, and stop. Otherwise, after eating a half-peanut, you will eat another peanut, which can be the remaining half-peanut (this would be a success, since you would have eaten $1/2 + 1/2 = t$ peanuts) or the complete peanut (this would be a failure, bacause you would have eaten $1/2 + 1 > t$ peanuts). Altogether, the probability of success is $1/3 + (2/3) \cdot (1/2) = 2/3$.

Given c, h and t, can you compute the probability of success?

Input

Input consists of several cases, with only integer numbers, each one with c, h and t. Assume $0 \leq c \leq 1000$, $0 \leq h \leq 2000$, and $0 \leq t \leq c + \lfloor h/2 \rfloor$.

Output

For every case, print with four digits after the decimal point the probability of eating exactly t peanuts when you are given a bag with c complete peanuts and h half-peanuts.

Hint

The expected solution has cost $O(t)$. The given bounds for c, h and t are rather small, in order to reduce the magnitude of numerical errors. Even so, use the type `long double` and try hard to avoid underflows and overflows. Good luck!

Sample input

```
1 2 1
3 0 3
0 6 3
2 1 2
1000 2000 1000
```

Sample output

```
0.6667
1.0000
1.0000
0.3333
0.7500
```

Problem information

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