Problem CEREMONYCAKE: Roofing Ceremony Cake

After almost 15 years, the *Absolute Construction Masters* Ltd. (*ACM*) finished your family home far enough, thus you are able to celebrate the roofing ceremony. You decided to invite both your complete family and your friends. For the dessert, you ordered a cake that has the shape of an equilateral triangle with side length a. You want to divide the cake into smaller equilateral triangle pieces which are served to the guests. The pieces need not be of the same size, but every guest (including you) receives exactly one piece and the complete cake must be used.
Furthermore, you know that there are exactly $5 \cdot (2^m)^2$ family members (you are one of these members, too) and exactly $1 + 3n$ friends on the ceremony. As you are too lazy to cut this cake by yourself into appropriate pieces, your wife will do this for you. However, you want to ensure that your family gets exactly $\frac{5}{9}$ of the complete cake in total. Hence, you divide the cake into two pieces beforehand with one cut. After this first cut, your wife must still be able to divide the two resulting pieces into the desired amount of smaller equilateral triangle pieces. Finally, you would like to know the length of this first cut.

Input

The first line denotes the number of test cases $1 \leq t \leq 2000$. Each of the following t lines contains the three integers a, n, m ($1 \leq a \leq 1337$, $0 \leq m \leq 32$, $0 \leq n \leq 10^8$).

Output

For each test case, print one line containing the length of your first cut. This number should be accurate up to 10^{-4} relative or absolute precision. If several suitable cuts exist, print the length of the longest one.

Sample Input 1

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1
10 1 1
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Sample Output 1

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6.666666667
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