The Lucky Prisoner

(Maybe) someday there is a planet used to jail much prisoners from universe. One time, the prison manager collects all of prisoners, with handcuff in their hand locked. He orders to officers to unlock all handcuffs. Then, he orders to officers to look at prisoners whose number can divided by two. If his/her handcuff is locked, the open it, otherwise, lock it. Then, he orders again to all officers to look at prisoners whose number can divided by three, and so on.

You, the universe criminal researcher, is requested to calculate the environmental criminal impact by calculating ratio of freed prisoners about all prisoners to the number of prisoners are known.

Input

Line 1 contains one integer T (1 <= T <= 100) number of test cases. Then T next lines contains one number K (1 <= K <= 10^{1000}), the number of prisoners.

Output

Output contains K lines, contains the probability of freed prisoners about all prisoners. the probabilty accuration is 10^{-500} with bankers' rounding method.

Example

Input:

2
5
100

Output (splitted to readibility) :
0.40000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
0.10000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000

Whitespace Explanation:
If there no input in any line, then do not print any line :)) Sorry for inconvenience. >:)