A Another Dice Game

In the game *Pickomino*[1] one has to throw 8 dice to reach at least a certain target score. The rules are as follows:

- The dice contain the values `1`, `2`, `3`, `4`, `5` and `worm`. The dice are fair, so all outcomes are equally likely.
- The game is started by throwing all dice.
- After a throw, the player must pick one of the six possible values and put all dice with this value aside. There must be at least one die with this value.
- After putting some dice aside, the player may choose to either throw the remaining dice again or stop. The player may only stop after at least one `worm` has been put aside.
- Each possible value may only be chosen once during the game.
- When the player stops, his total score is the sum of the values of the dice that were put aside. A `worm` is worth 5 points.
- The player can get stuck by throwing only values that were already put aside, by having put all dice aside but not having a `worm` or by not having reached the target score.
- If the player is stuck he scores 0 points and the game is ended.

Jan is playing Pickomino and wants to score at least n points. When Jan uses an optimal strategy, what is the probability that he reaches this target?

Input

On the first line one positive number: the number of test cases, at most 100. After that per test case:

- one line with the integer n $(1 \leq n \leq 40)$: the target value.

Output

Per test case:

- one line with a floating point number: the probability that you score at least n points when using an optimal strategy.

This number should be accurate up to 10^{-6} relative or absolute precision.

[1] Dutch people may know this game as *Regenwormen*

Sample in- and output

Input	Output
3 5 21 40	0.9934260978934218 0.8930267371507457 0.0001461079070016448

To reach 5 points it is enough to throw at least one `worm`. The optimal strategy in this case is therefore to stop as soon as you have a `worm`. If you did not throw a worm, you should put aside as few dice as possible to maximize the chance of throwing a worm in a later throw.