F. Royal Rumble

Score: 1

CPU: 1s
Memory: 512MB

Royal Rumble is one important Pay Per View in World Wrestling Entertainment. In this show the main event is a 30 man Battle Royal. Where two Superstars start wrestling in the ring. First Superstar who enters the ring is called First entrance and the second one is called Second entrance. If a man falls down from the ring over the top rope then he is eliminated and can not continue anymore. Every 90 seconds a new Superstar enters the ring. When 29 Superstars are eliminated then the sole survivor is the winner of the match and heads to the main event in WrestleMania, the biggest stage of them all.

Every entrance is a surprise. No one knows at which entrance someone will enter. Next year will be the biggest Royal Rumble in the history consisting of N Superstars. Luckily, WWE has listed all the N Superstar's name but they did not provide the information of the serial of their entrances. They made a quiz. You have to make a list containing the serial of them and send it to WWE. If any of your guesses is correct then you can attend the next year's Royal Rumble at The Wells Fargo Center in Philadelphia, Live!

Suppose there are 3 Superstars, AJ Styles, John Cena and Brock Lesnar. This is the actual order of their entry. You made a list containing Brock Lesnar, John Cena, AJ Styles. Your Second guess is correct. So you are heading to Philadelphia. If you would provide a list containing John Cena, Brock Lesnar and AJ Styles then all of your guesses would be wrong and sorry, we will have to watch it on TV.

You know nothing about WWE and still want to go to the Royal Rumble. So you made a random serial of them and send it to the WWE. What is the probability that you are going to the next year's Royal Rumble at The Wells Fargo Center in Philadelphia, Live!

Input

The first line of input contains and integer, **T**, denoting the number of test cases. The in next **T** lines there will be one integer, **N**, denoting the number of participants in the Royal Rumble in each line.

Output

For each test case print a floating point number denoting the probability that you are going to the Royal Rumble 2018. The number should be exactly **10** digits after decimal point.

Constraints

1 <= T <= 1000

1 <= N <= 1000,000,000,000,000,000

Sample

Input	Output
2 1 2	1.0000000000 0.5000000000

In the first sample, There is just one superstar and you can not make a mistake.

In the second sample, There are two superstars. Say the actual order is A then B. You can provide a list {A,B} or {B,A}. So the probability of guessing at least one is 1/2.