Each 😊 represents a cake won.
Each 🙄 represents a loss.

The black numbers on the lines represent the chance of moving along that line; the green numbers represent the chance of getting to that point from START.
How Do You Calculate Your Chance of Winning?

The easiest way to calculate your chance of winning is to first calculate your chance of losing and then subtract it from 1. That is your chance of winning. But, if you don't want to take the easy way . . .

The hard thing about calculating your chance of winning is that you don't know how many cakes you'll win. If you play 4 times, you might win 0, 1, 2, 3, or 4 cakes. Each of those chances has to be calculated separately. Also, if you win 2 cakes, you might win one the first time you played, none the second time, none the third time, and your second cake the last time you played. Or, you might lose the first two times, and win the second two times. Or . . . There are many different ways (actually 6) to win 2 cakes if you play 4 times. You have to calculate the probability of winning each way and add those probabilities together to get the probability of winning 2 cakes. To get the probability of winning at least 1 cake, you have to add the probability of winning 1 cake to the probability of winning 2 cakes to the probability of winning 3 cakes to the probability of winning 4 cakes.

Let's calculate the probability of winning 3 cakes.

Start at the blue circle. Follow the yellow lines. Notice that you end up at the number 3. Now, do it again with your calculator. Type in the number on the first yellow line. Now, type times. Type in the number on the next yellow line, then times again. Continue like this until you reach the 3. Then, type equals. You should get 0.0009. This is the probability of winning, winning again, then losing, and then winning. There are three other ways to win 3 cakes. Calculate them the same way, then add all four numbers together. This is the probability of winning 3 cakes if you play 4 times.

Now, see if you can calculate the probability of winning 1 cake, 2 cakes, and 4 cakes. Add all these numbers together. Do they match the number on the chart? (You'll have to round.)