

THINKING ABOUT THINKING ABOUT THINKING ABOUT ...

A DUBIOUS ATTEMPT TO RUN THE 2/3 AVERAGE

Jeffrey Goldberg

`jeff@1Password.com`

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1Password

TWO THIRDS AVERAGE

You will each be asked to silently pick a whole number from 1 through 100 with the following in minds

1. We will calculate the average of the all the numbers picked, take $2/3$ of it and then round to the nearest integer. Let's call that number R .
2. The person (or persons) whose number is closest to R wins a prize.¹
3. You are not to communicate with each other about your number nor about your thinking or strategy.

¹Prize to be determined.

MECHANICS: YOUR PART

1. You should have a 3 inch by 5 inch card and something to write with;
2. Recall that your goal is to pick a number from 1 through 100 that is closest to $2/3$ the average of what everyone (including you) are picking;
3. On one side of your card write your name (so we can identify winners)
4. Take time to think about what number you will pick, but do not discuss it or your specific thinking about it with other participants;
5. On other side write the number you pick. Keep it secret;
6. Pass your cards to me, number side down.

1. I collect the cards name side up.
2. I shuffle them.
3. I turn the deck to be number side up.
4. I shuffle again.
5. I enter the numbers into a script I have to identify 2/3 the average and the winning numbers.
6. I go through the number side up deck to find the winning cards. I look at the names on the other side of that card.

- If I handle the cards correctly, the only people whose choices will be known to anyone (including me) are the winners.
- There are so few of us, that revealing your choice (after everything is done) leaks information about what others picked. So try to be quiet about it.

NEWCOMB'S PARADOX

There are two boxes.

Box A is transparent and contains \$1 000

Box B is opaque and is either empty or contains \$50 000.

You get to choose between taking *only* Box B or *both* boxes.

As described, it makes sense to take both boxes.

THE TWIST

- A super-intelligent alien, the Predictor, has studied human psychology in great detail;
- If the Predictor predicts that you will take only Box B it will have put \$50 000 in Box B.
- If, however, the predictor predicts that you take both boxes, it will leave Box B empty.
- The predictor's placing (or not placing) the money in Box B is well audited, and the contents of the box do not change after the Predictor has done its thing.
- The Predictor has a perfect track record of predicting correctly.

Would you take both boxes or just Box B?

APPENDIX

APPENDIX

2/3 COMPUTATIONS

COMPUTING 2/3 AVERAGE

```
def compute_r(numbers: list[int]) -> int:
    n = len(numbers)
    average = sum(numbers)/n
    tt = 2.0/3.0 * average
    r = round(tt)
    return r
```

IDENTIFYING WINNER

```
def find_winning_numbers(r, numbers):  
    min_diff = 100  
    winners: list[int] = []  
    for g in numbers:  
        current_diff = abs(r - g)  
        if current_diff == min_diff:  
            winners.append(g)  
        elif current_diff < min_diff:  
            winners = [g]  
            min_diff = current_diff  
  
    return winners
```