Math file

# Math A

Result: Absolutely terrifying. Even a group of 1k rounds shows too many problems.

(Might caused by program bugs)

|  |  |  |  |
| --- | --- | --- | --- |
| 10000x | 1 | X100 | 1 |
| 5000x | 19 | X20 | 29 |
| 2500x | 200 | X10 | 700 |
| 1000x | 1500 | X5 | 4450 |
| 500x | 3500 | X3 | 12600 |
| 250x | 8000 | X2 | 28000 |
| 100x | 15000 |  |  |
| 50x | 20000 |  |  |
| 25x | 40000 |  |  |
| 10x | 80000 |  |  |
| 5x | 95000 |  |  |
| 2x | 220000 |  |  |
| 1x | 481000 |  |  |

## Math A2

Approach: rewrite the entire thing to make it much harder

Result: A bit too bad, Top 10 in a group of 1k only being 2175-5965.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Object | Per 10M | Total | Object | Per 10M | Total |
| 10000 | 3 | 9856600 | x100 | 2 | 143400 |
| 5000 | 47 |  | x20 | 28 |  |
| 2500 | 300 |  | x10 | 870 |  |
| 1000 | 1250 |  | x5 | 2700 |  |
| 500 | 5000 |  | x3 | 27800 |  |
| 250 | 15000 |  | x2 | 112000 |  |
| 100 | 45000 |  |  |  |  |
| 50 | 140000 |  |  |  |  |
| 25 | 400000 |  |  |  |  |
| 10 | 800000 |  |  |  |  |
| 5 | 1600000 |  |  |  |  |
| 2 | 2350000 |  |  |  |  |
| 1 | 4500000 |  |  |  |  |

## Math A3

Added BONUS Symbol, which pays based on the amount of BONUS landed.

3 BONUS: 80x

4 BONUS: 200x

5 BONUS: 500x

Chance of getting BONUS per block is determined by the existing BONUS symbol count. Use CTRL+F to search

*bonus\_chances =*

in the code.

The odd of getting multiplier is also increased, to a total of 2.4%

Also added more fields in the database to easier to figure out what’s going on.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Object | Per 10M | =% per block | Total | Object | Per 10M | =% per block | Total |
| 10000 | 3 | 0.0000% | 9760000 | x100 | 15 | 0.0002% | 240000 |
| 5000 | 117 | 0.0012% |  | x20 | 185 | 0.0019% |  |
| 2500 | 480 | 0.0048% |  | x10 | 1800 | 0.0180% |  |
| 1000 | 2250 | 0.0225% |  | x5 | 9500 | 0.0950% |  |
| 500 | 11000 | 0.1100% |  | x3 | 57500 | 0.5750% |  |
| 250 | 27900 | 0.2790% |  | x2 | 171000 | 1.7100% |  |
| 100 | 67000 | 0.6700% |  |  |  |  |  |
| 50 | 170000 | 1.7000% |  |  |  |  |  |
| 25 | 370000 | 3.7000% |  |  |  |  |  |
| 10 | 770000 | 7.7000% |  |  |  |  |  |
| 5 | 1350000 | 13.5000% |  |  |  |  |  |
| 2 | 2400000 | 24.0000% |  |  |  |  |  |
| 1 | 4591250 | 45.9125% |  |  |  |  |  |

Current Time: 2024-09-05 15:04:46, Progress: Round 1 finished

Current Time: 2024-09-05 15:07:07, Progress: Round 10000 finished

So the speed is 70 rounds per second. 1M round will take almost 4 hours. My fault, can’t afford a better gaming PC.

Next step is going to be optimize code to make it run faster, as well as do a 1M rounds simulation while I’m sleeping (if the program didn’t crash for whatever reason.)

## Math A4

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Coin | Per 10M | =% per block | Total weight | Multi | Per 10M | =% per block | Total weight |
| 10000 | 3 | 0.0000% | 9830000 | 100 | 10 | 0.0001% | 170000 |
| 5000 | 117 | 0.0012% |  | 20 | 115 | 0.0012% |  |
| 2500 | 480 | 0.0048% |  | 10 | 1200 | 0.0120% |  |
| 1000 | 2250 | 0.0225% |  | 5 | 9225 | 0.0923% |  |
| 500 | 16000 | 0.1600% |  | 3 | 36450 | 0.3645% |  |
| 250 | 39900 | 0.3990% |  | 2 | 123000 | 1.2300% |  |
| 100 | 85000 | 0.8500% |  | **Average multi value** | | **2.451618** |  |
| 50 | 130000 | 1.3000% |  |  |  |  |  |
| 25 | 325000 | 3.2500% |  |  |  |  |  |
| 10 | 475000 | 4.7500% |  |  |  |  |  |
| 5 | 1450000 | 14.5000% |  |  |  |  |  |
| 2 | 3000000 | 30.0000% |  |  |  |  |  |
| 1 | 4306250 | 43.0625% |  |  |  |  |  |
| **Average coin value** | | **6.86381** |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| Chance of getting C on every block (default value) | | **0.0135** |
| Chance of getting C decrease for every previous C | | 0.425 |
| Minimum value of Chance of getting C |  | 0.0015 |
| (Multiply those numbers by 100 for % value) |  |  |

### (Click to expand) 50k simulated rounds

After 50k simulated rounds it looks much better.

Since the max win is set to 250Kx I’m aiming for a price tag of 600x thus avg value should be ~580x.

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Average and Median

Average result: 516.58

Median result: 228

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Leaderboard

# 1: 223912

# 2: 195155

# 3: 128491

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Top percentile

Top 1% percentile: 4725

Top 2% percentile: 2947

Top 5% percentile: 1576

Top 10% percentile: 982

Top 25% percentile: 478

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Bottom percentile

Bottom 25% percentile: 117

Bottom 10% percentile: 72

Bottom 5% percentile: 58

Bottom 2% percentile: 49

Bottom 1% percentile: 45

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Thresholds

Rounds >= 500: 12010 (1 in 4.16)

Rounds >= 1000: 4887 (1 in 10.23)

Rounds >= 2500: 1280 (1 in 39.06)

Rounds >= 5000: 459 (1 in 108.93)

Rounds >= 10000: 152 (1 in 328.95)

Rounds >= 20000: 41 (1 in 1219.51)

Rounds >= 50000: 7 (1 in 7142.86)

## Math A5

This is the finalized version of Math A.

Average = 579.19

Median = 235

RTP if 600x per buy:: 96.53%

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Coin | Per 10M | =% per block | Multi | Per 10M | =% per block |
| 10000 | 3 | 0.0000% | 100 | 7 | 0.0001% |
| 5000 | 117 | 0.0012% | 20 | 95 | 0.0010% |
| 2500 | 480 | 0.0048% | 10 | 1200 | 0.0120% |
| 1000 | 2250 | 0.0225% | 5 | 8725 | 0.0873% |
| 500 | 16000 | 0.1600% | 3 | 40150 | 0.4015% |
| 250 | 39900 | 0.3990% | 2 | 139523 | 1.3952% |
| 100 | 85000 | 0.8500% | Total weight | 189700 | 1.8970% |
| 50 | 125000 | 1.2500% | **Average multi value** | | **2.412868** |
| 25 | 304800 | 3.0480% | Existing | Chance of getting | |
| 10 | 491000 | 4.9100% | BONUS | another BONUS | |
| 5 | 1400000 | 14.0000% | count | (per block) | |
| 2 | 2853200 | 28.5320% | 0 | 4.20% |  |
| 1 | 4492550 | 44.9255% | 1 | 3.70% |  |
| Total weight | 9810300 | 98.1030% | 2 | 3.20% |  |
| **Average coin value** | | **6.780521** | 3 | 2.70% |  |
|  |  |  | 4 | 1.85% |  |
|  |  |  | 5+ | No |  |

|  |  |  |
| --- | --- | --- |
| Chance of getting C on every block (default value) | | **1.3500%** |
| Chance of getting C decrease for every previous C | | 42.5000% |
| Minimum value of Chance of getting C |  | 0.1500% |

### (Click to expand) 1M simulated rounds

Top percentile

Top 1% percentile: 5398

Top 2% percentile: 3403

Top 5% percentile: 1789

Top 10% percentile: 1092

Top 25% percentile: 513

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Bottom percentile

Bottom 25% percentile: 119

Bottom 10% percentile: 72

Bottom 5% percentile: 58

Bottom 2% percentile: 49

Bottom 1% percentile: 44

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Thresholds

Rounds >= 500: 256153 (1 in 3.90)

Rounds >= 600: 210170 (1 in 4.76)

Rounds >= 1000: 111347 (1 in 8.98)

Rounds >= 2500: 31607 (1 in 31.64)

Rounds >= 5000: 11545 (1 in 86.62)

Rounds >= 10000: 3907 (1 in 255.95)

Rounds >= 20000: 1317 (1 in 759.30)

Rounds >= 50000: 283 (1 in 3533.57)

Rounds >= 100000: 99 (1 in 10101.01)

Rounds >= 150000: 61 (1 in 16393.44)

Rounds >= 200000: 37 (1 in 27027.03)

Rounds >= 250000: 23 (1 in 43478.26)

# Math B

Will be implemented soon. When I finished hiccupping. Please wait A bIt lOnGeR.

## Seed

**New element: Seed**

Seed will determine part of the performance, with a better seed = higher chance of winning big.

Unless otherwise specified, a higher tier seed will have equal or better odds of getting high value coins, high multipliers, and Collect ( C ).

Rank: AAA being the highest and F being the lowest.

**SPECIAL ???%**

**Very significantly** more multiplier, to a total of 6.30%

**Very significantly** less collect.

Another side effect: The quality of coins has been reduced, with 2500x-10000x coins being removed.

It’s kind of crazy because you can land a few multipliers and go crazy or miss all of them and get absolutely nowhere. Here’s the result of 200k simulated rounds:

Average result: 5777.55

Median result: 548

Median is <0.1x average.

And the gap between top 1%/2%/5%/10%/25% percentile is also insane.

Planned to add a guaranteed 5x for SPECIAL seeds, but then decide to not implement it.

**AAA 1%**

Guaranteed ALL 3 types of good things in the first spin:

There are 3 types of “good things”:

100x or higher coin., Multiplier, C (Collect).

**AA 3%**

Guaranteed 2 types of good things in the first spin:

**A 11%**

Guaranteed 1 type of good things in the first spin:

**B 15%**

All odds are somewhat better than a C seed.

**C 35%**

The average seed. Nothing special.

**D 20%**

All odds are somewhat worse than a C seed.

**E 12%**

The following restrictions are applied:

Coin: Naturally landed coin cannot exceed 250x.

Multiplier: No more than 5x.

C (Collect): Cannot land more than 2.

Bonus: Cannot land more than 4.

**F 3%**

The following restrictions are applied:

Coin: Naturally landed coin cannot exceed 50x.

Multiplier: No more than 2x, and very hard to get.

C (Collect): Forbidden.

Bonus: Cannot land more than 3.

# Math C

More game modes

**Lite version:**

Cheaper, but only have 9 blocks instead of 25 blocks.

**Guaranteed Multi+Collect version:**

Begin with a random multi and a C on the board.

**Premium version:**

Begins with a mystery symbol on the center of the board.

It will be revealed after first round of coin reveal but before any multiplier/collect takes action.

Mystery symbols can also land during gameplay.

There are 2 types of Mystery symbol. The weaker one being “?”, and the stronger one being “???”

“?” Symbol will contain one of the following:

70%: A coin. (Min 50x)

22%: A multiplier.

8%: A collect. (If no pending Collect is on the board)

“???” Symbol will contain one of the following:

63%: A coin. (Min 250x)

26%: A multiplier (Min 5x)

11%: A collect. (If no pending Collect is on the board)