

Second Screen Game Module

Chapter 1

GENERIC SET-UP

- 1 Establish a number of probability values. [GATE CHANCE]
In the illustrated case, the Binomial expansion is used where $p = 0.45$, and $N=9$.
This sets up 10 probability values (gates).
The module can have any number of chapters which is recommended to avoid presenting players with the same bonus process all the time.
The illustration in this text is restricted to a single chapter, we have named Chapter 1.
In terms of chapters, there could be multiple chapters, each with variable "gates" and numbers (items 1 through 4)
- 2 Assign a Prize value to each Gate [GATE VALUE]
- 3 Using the probability values calculate a range of numbers for each gate from a set population. [GATE RANGE]
- 4 Set a run number [RUN NUMBER]
This is basically the number of iterations that will be performed when the feature starts to run.
In our illustration, this is set to 4
- 5 Set a participant's number [PARTICIPANT NUMBER]
The player will choose one of these numbers, the remainder will be competitor numbers
- 6 Each participant number is randomly assigned a 'finish' position
- 7 The player selects one of the participant numbers as his own. [VEHICLE]
- 8 The Feature begins
- 9 The win is calculated and paid after all iterations are complete and the run of all participants are complete.
The player always wins from the feature; the feature merely determines how much.

An implemented example follows. It is themed on cars racing through various gates and accumulating a prize value for each gate passage. At the end of the race, the finish position of the player's car determines by how much the accumulated value is multiplied.

1 Ten probability values are required. This can be assigned or it can be calculated as it is here.

A Binomial expansion using: $n = 10$
 $p = 0.45$
 $q = 0.55$

Gate #	Gate Probability
1	0.004605
2	0.033912
3	0.110986
4	0.211881
5	0.260036
6	0.212757
7	0.116049
8	0.040693
9	0.008323
10	0.000757
	<u><u>1</u></u>

2 Assign a prize value to each gate. In this case the following is assigned

A Gate #	B Gate Probability	C Prize Value	D Average Win per Run	E Final Gate Value
1	0.004605	50	0.230268329	0.92107332
2	0.033912	7	0.237385714	0.94954286
3	0.110986	2	0.221971057	0.88788423
4	0.211881	2	0.423762927	1.69505171
5	0.260036	1	0.260036342	1.04014537
6	0.212757	2	0.425514014	1.70205606
7	0.116049	3	0.348147829	1.39259132
8	0.040693	10	0.406926034	1.62770414
9	0.008323	30	0.249704612	0.99881845
10	0.000757	150	0.113502096	0.45400839
	<u><u>1</u></u>			

3 Four (4) runs are chosen - that is each vehicle will pass through 4 gates. Column E in the above table calculates the impact.

4 From a given population of numbers, say 3000, distribute ranges or block of numbers to each gate according to the gate probability value (column B in the above table).

For example, from a population of 3000, the following would apply: 3000

	Greater than	Less than or equal to
1	0	13.8161
2	13.8161	115.5528
3	115.5528	448.5094
4	448.5094	1084.154
5	1084.154	1864.263
6	1864.263	2502.534
7	2502.534	2850.682
8	2850.682	2972.759
9	2972.759	2997.73
10	2997.73	3000

5 RANDOMLY assign to each vehicle 4 numbers within the range greater than 0 but less than or equal to 3000. The numbers thus randomly assigned, determine which gates each vehicle will pass through.

6 By random selection, each vehicle is assigned a finishing position (1st, 2nd, or 3rd)

7 The player selects one of the available participating vehicles.

8 The race begins. Each vehicle will pass through 4 gates and accumulate the value resident on each gate.

9 Having completed the gate accumulation phase, the vehicles move to a finish line.

10 The accumulated value of the player's vehicle is multiplied by 3 if it came first, by 2 if it came second and by 1 if it came last.

WORKED EXAMPLE

Second Screen Bonus - Chapter 1 only

Shaded values are variables

p	0.45	Return to Player Percentage	18.67%
q	0.55		
n	9		
Runs	4		

Probability	Prize	Average	Average
		Win per Rur Win / Series	Hit Rate
0	50	0.230268	0.92107332
1	7	0.237386	0.94954286
2	2	0.221971	0.88788423
3	2	0.423763	1.69505171
4	1	0.260036	1.04014537
5	2	0.425514	1.70205606
6	3	0.348148	1.39259132
7	10	0.406926	1.62770414
8	30	0.249705	0.99881845
9	150	0.113502	0.45400839
10	0	0	0
		2.917219	11.6688758

Cycle Triggers	9765625
Hit Rate	78125
	125

9.34% [average win / hit rate]

Number of Vehicles	3	RTP After Uplift	18.67%
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Finish Position	Prize Uplift
1	3
2	2
3	1
4	0
5	0
Average	2

Check No:	6
Average Uplift	6
	2

DIAGRAMS

See below two examples of the bonus feature with Player Vehicle 1.
Note: The vehicle may pass through the same gate more than once.

