

## Expected Wins for Standard Keno with 80 Numbers Using Standard Keno Probability and Empirical Data Probability

Game with 80 Numbers  
House Draws 20 Numbers  
Player Picks 10 Spots

9/15/2016

Catches	Standard Keno Probability	Empirical Data Probability (see note below)
4	0.3063%	30.63%
5	0.0645%	6.45%
6	0.0129%	1.29%
7	0.0024%	0.24%
8	0.0004%	0.04%
9	0.0001%	0.01%
10	0.000011%	0.00%

**To use this spreadsheet, enter the number of locations and the prize caps desired.**

### Specifications for Customer's Keno System

Business Hours per Day 24  
Business Days per Month 30

#### Location Plays

Expected Players per Hour 3 per location  
Draws per Ticket 5  
Tickets per hour 2  
Tickets per Day 144  
Tickets per Month 4320  
Price of keno Cards 0.01 \$43.20  
  
Draws Played per Hour 30  
Plays per Day 720  
Plays per Month 21600 per location

#### Locations in Network

**10**

**<--- Enter number of locations**

Expected Plays per Month in Network 216000  
Expected Tickets Played in Network 43200  
Revenue From keno Card Sales \$432.00

Keno Draws per Hour 15  
(draw at 4 minute interval)  
Draws per Day 360  
Draws per Month 10800

**Spot's Expected Wins and Payout  
using standard keno probability**

Catches (matches)	Monthly Wins	Prize Cap	Monthly Payout	Wins Per Day	Payout Per Day
4	33.08	\$0.00	\$0.00	1.1	\$0.00
5	6.97	\$5.00	\$34.83	0.2	\$1.16
6	1.39	\$10.00	\$13.93	0.0	\$0.46
7	0.26	\$50.00	\$13.18	0.0	\$0.44
8	0.05	\$100.00	\$4.69	0.0	\$0.16
9	0.00	\$200.00	\$0.00	0.0	\$0.00
10	0.00	\$500.00	\$0.00	0.0	\$0.00
Total Monthly Prize Payout (using capped prize amounts)			\$66.63	1.4	\$2.22

**Each Location Payout Cost                      \$6.66                      10 locations**

**Spot's Expected Wins and Payout  
using probability from empirical testing data collected by Thomas Butler**

*Enter your prize caps here:*

Catches (matches)	Monthly Wins	Prize Cap	Monthly Payout	Network Wins Per Day	Network Payout Per Day	Location Wins Per Day	Location Payout Per Day
4	3308	<b>\$0.00</b>	\$0.00	110.3	\$0.00	11.0	\$0.00
5	697	<b>\$0.00</b>	\$0.00	23.2	\$0.00	2.3	\$0.00
6	139	<b>\$2.00</b>	\$278.61	4.6	\$9.29	0.5	\$0.93
7	26	<b>\$5.00</b>	\$131.77	0.9	\$4.39	0.0878	\$0.44
8	4.7	<b>\$10.00</b>	\$46.93	0.2	\$1.56	0.0156	\$0.16
9	0.8	<b>\$10.00</b>	\$7.82	0.0	\$0.26	0.0026	\$0.03
10	0.1	<b>\$10.00</b>	\$1.21	0.0	\$0.04	0.0004	\$0.00
Total Monthly Prize Payout (using capped prize amounts)			\$466.35	139.2	\$15.54		\$1.55

NOTE: catch of 9 or 10 will probably not happen

Less keno Card Revenue                      \$1.44  
Net Gain (Loss) Per Location                      -\$0.11

**Each Location Payout Cost                      \$46.63                      10 locations**

**Note on empirical data probability:**

The probabilities were computed from testing draws and picks using the OFG keno game developed by Thomas Butler. Two tests were run to validate the OFG keno system:

Test #1, 10,000 picks against 1 draw for five draws; result was 32% for 4 spots, 6 % for 5 spots, etc.

Test #2, 3,200 picks against 600 draws. Results were essentially the same as in test #1

The tests show the probability consistent regardless of the number of picks or draws; which was expected, since the probability is a function of the combination computations. In this case for standard keno with 80 numbers, house picks 20 numbers, and the player picks 10 spots and must have x number of catches to win.

**Keno Glossary:**

House	keno game operator, (casino, etc.)
Catch	number picked by player that matches a house pick
Spot	number picked by player
Draw	series of numbers picked by the house