

A FIELD GUIDE TO THE LOTTERY GAMES OF NORTH AMERICA

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As I related in the article that appeared in the March/April 2016 issue of *Insights*, I was glad when Jade asked me for a chart that would lay out the relationships among the various draw games being sold in North America. Partly, I was just glad that she thought it would be relevant to her as she worked for the ad agency serving the lottery account. At another level, I looked forward to the mental exercise of doing for lottery games what biologists of many generations ago did for the plants and animals they encountered: they constructed simple classification keys that served not only to identify the creatures by their differences, but to reveal their relatedness through their similarities. The recognition of natural groupings according to deep structural similarities is fundamental in the life sciences.

As I got on with this work, it became clear to me that the structural organizing principle had to be how the drawing event determines the winning outcome. This may not be the way we usually think about draw games - we may tend to think more about the size of the top prize, or how often the drawing events are held, or whether the games is relatively old, or new. All these perspectives are fine, and they can be added as descriptive notes to the chart that follows. In fact, once I gave her the chart, Jade embellished her copy with sticky notes, some of I reproduce here because I think they add value. But the underlying questions are these:

1) Does the winning event depend only upon a match between the player's choice of symbols and the lottery's selection?

- a. In many games (like Lotto) it does.
- b. Sometimes matching is an element of the winning event, but there is another requirement like physical alignment of the symbols on a card, as in Bingo.
- c. Sometimes not matching determines the win, as in the child's game of "Scissors, Paper, Rock."

2) Do the player and the lottery choose the same number of symbols?

- a. In many games (again, like Lotto) they do choose the same number of symbols from the same field of possible choices.
- b. In other games, for example Keno, they may choose fields of different sizes.

3) Do the player and the lottery choose more than one symbol from each field of symbols?

- a. In many games, again like Lotto, they do.
- b. In other games, like the classic "Numbers" game, they do not.

The classic Numbers game drawing is sometimes described as "select a number in the range 0 through 9 three times with replacement." However, I find it clearer to describe it as "select a single symbol from each of three fields; each field is numerals 0 through 9." Putting it this way helps us to realize that it would be possible to use some other field definition than the numerals 1 through 9 - that is, we could find games with different properties by using a base other than ten. These have not been developed, as Jade's note on the chart reminds us.

Having laid out a chart using these three questions, I feel that I have identified three meaningful groups of matching games: the Keno (K), Lotto (L) and Numbers (N) groups. In order to describe the individual games within these groups further in their specifics, I propose a notation that adds the specifics of field sizes and number of symbols chosen from each field. Classic Keno requires that we state the field size, the size of the lottery's selection, and the size of the player's selection: this makes it clear that Keno is in fact several different games, from "K.1/20/80" (one-spot Keno) up through "K.10/20/80" (ten spot Keno) or even further in some jurisdictions.

Writing it this way makes it clear to me that we could think of Keno-type games with different selection sets, from different field sizes than 80. Some of these could have interesting properties.

DRAW GAMES OF NORTH AMERICA

ANY UNPREDICTABLE PUBLISHED NUMBER (OLD ILLEGAL GAME)

IS A WIN DETERMINED BY **MATCH / NO MATCH** OF SYMBOLS (NUMBERS) CHOSEN BY PLAYER AND LOTTERY?

NO → INSTANT GAMES
BINGO
MULTIPLIER GAMES
PAPER, SCISSORS, ROCK!
or something else

↓ YES

DO THE PLAYER AND LOTTERY **CHOOSE THE SAME NUMBER** OF SYMBOLS?

NO → **KENO GAMES**

↓ YES

CHOOSE **MORE THAN ONE** SYMBOL FROM ANY FIELD?

K. 1/20/80
⋮
K 10/20/80
AT LEAST TEN DISTINCT GAMES!

NO

NUMBERS GAMES

FIELD SIZE = 10
N 10, 10, 10
("PICK 3")

OTHER

↓ YES

LOTTO GAMES

HOW MANY FIELDS?
TWO
SPLIT LOTTOS

ONE
CLASSIC LOTTOS
L. 6/49

NOT DEVELOPED?

MORE

L. 5/69, 1/26 (POWERBALL)

In games of the Lotto type it is understood that the lottery and the player make selections of the same size. In the original Lotto game, these selections were made from a single field, so "L.6/49" is sufficient to describe how the winning event(s) are determined in classic Lotto. Cash Lottos in the various states are usually L.5 of some field size. The "All or Nothing" game is "L.12/24."

Powerball is also a Lotto-type game but with two fields. It would be designated "L.5/69, 1/26." MUSL's Hot Lotto is "L.5/47, 1/19."

We could think about Lotto games with more than two fields. Like Numbers games in bases other than ten, these have not been developed.

Returning to the classic "Pick 3" game: in this shorthand notation, it would be "N.10,10,10."

I hope this way of looking at our draw games adds something to the way you have understood them. Of course, there is more to each game than is represented on the chart. The price, the frequency of drawings, the various prize tiers,

and the name and iconography all contribute to the character of a game. But, as Jade said when I gave her the chart, "OK. This shows how they are the same; it shows some places where they could be different. That's something to work with." ■

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