

Who wants to be a millionaire?

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Lotteries of different kinds have been part of the human culture since remote times. Apparently, the initial idea was to use the money gained through the game to finance government projects. This seems to be how the Great Wall of China was built. Then, lotteries started to be used as a simple form of entertainment. The first known European lottery dates back to the Roman Empire and since then many countries have created different types of lottery. According to Scientific Games, an authority in the global lottery and regulated gaming industry, lottery sales worldwide totaled US\$ 262 billion in 2011.

The frequentist notion states that the probability of a given event relates to the frequency at which such event is repeated. Additionally, as predicted by the Law of Large Numbers, when an event is repeated many times, the average of the results from all events should be close to the expected result. Thus, games of all kinds in which many repetitions occur (such as lotteries) are ideal labs for the study of probabilities. Now a new study shows that not all combinations of numbers have the same probability of occurring in a [lottery](#) draw.

The study entitled The Geometry of Chance: Lotto Numbers Follow a Predicted Pattern, by Renato Gianella, is based on mathematics and probabilities theories applied to lottery drawings. It adopts a colored template that determines all the possible combinations of numbers, as established by Pascal's rule. The adoption of this colored template provides an easier understanding, and correct identification, of the combinations of numbers with highest probabilities to win. Through experimentation, the method shows that it is possible to detect that the

results of a lottery draw follow the same behavior pattern as predicted by the Law of Large Numbers.

For instance, using the method proposed by Gianella, templates built on previous results from a [number](#) of lottery games in different countries show that as more draws are performed, the expected result of each template is closer to the observed result, indicating that a pattern for these combinations exists. Thus, the right choice of combinations can greatly increase your chances of picking the winning combination in your next [lottery ticket](#).

The method was tested with more than 20 lottery draws all over the world, and in each case it demonstrates that the probability that a given group of combinations (defined according to the colored template adopted) will occur is not the same for all groups of combinations and that there are groups that show a higher probability to win.

For instance, the method indicates that Power Ball USA has 19 groups of different [probabilities](#) rather than a single probability for all possible combinations of numbers. More than merely indicating that some combinations have more chance to win the jackpot than others, the method allows the identification of the combinations having the highest probability to win the next game.

"Lottery should no longer be seeing as a form of a gambling but a true representation of the probabilistic theory and the Law of Large Numbers," says Renato Gianella, "the man who counted" in Brazil.

More information: The paper has been published in the *Biometric Brazilian Journal* and is available for download at

jaguar.fcav.unesp.br/RME/fasci..._n4/A7_RGiarelli.pdf

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