

Lottery Odds



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Ever since games of chance were invented, people have attempted to come up with a “strategy” for winning. While it’s certainly fun to pick favorite numbers, there certainly is no way to “beat the odds” of any given legitimate lottery game without pure luck — that’s what makes it a game of chance. For each type of wager, every player has an equal opportunity to win. To understand that concept, it helps to understand “odds.”

Every Louisiana Lottery game has odds associated with the overall game and with individual outcomes. Odds are based on a mathematical formula that indicates your chance of winning. The Lottery posts both overall odds for a game, which express the chances of winning ANY prize per wager, as well as the odds of winning a particular prize amount within the game. For example, a \$3 scratch-off game may have overall odds of 1 in 3.3 to win any prize, but odds of 1 in 200,000 to win the top prize.

Scratch Offs. Scratch-off odds will vary depending upon the prize pool and prize structure of the game, such as how many individual prizes are in each of the prize levels and the total number of tickets printed for the game and payout percentages for the game, which vary by ticket price.

Odds are determined by taking the total number of tickets in a game and dividing it by the total number of prizes in that game. For example, if there are 500,000 winning tickets printed and there are 1.5 million tickets, the overall odds of winning a prize would be:

$$\frac{500,000}{1.5 \text{ million}} \quad \text{or} \quad 1 \text{ in } 3$$

Odds of 1 in 3 mean that you have a 1 in 3 chance of winning. If you divide the 1 by 3, you get .3333 or 33 percent. So overall odds of 1 in 3 mean you have a 33 percent chance of winning a prize over the entire game. Said differently, overall game odds of 1 in 3 mean that 33 percent of the game’s tickets are winners. This does not mean that every third ticket is a winner. Winning tickets are randomly distributed throughout the game to ensure the game’s integrity so that NO ONE, not even Lottery staff, knows which tickets are winners.

Draw-style Games. The same theory of randomization applies to the drawing process for draw-style games. For example, Pick 3 “Straight” odds of 1 in 1,000 mean that there are 1,000 different Pick 3 “Straight” combinations and one of those will be drawn. It does not mean that in 1,000 drawings, a given Pick 3 combination will definitely be drawn. That’s because numbers that have been drawn in the past are not eliminated from the draw. To be a truly fair game, every unique number combination has an EQUAL chance of being selected for every drawing, regardless of whether or not it was drawn in the past.

Draw-style game odds will vary depending upon the game’s matrix, which includes the field of numbers from which to choose, the number of correct choices needed for a payout and whether the choices must be in correct order or not. For an individual wager in a draw-style game, the odds of winning a particular prize will generally increase with the potential prize amount. Using Lotto as an example, here is how the odds of winning the jackpot prize (1:3.83 million) are calculated. There is only one way to win the jackpot, by picking 6 numbers correctly from a field of 40:

$$\frac{40 \times 39 \times 38 \times 37 \times 36 \times 35}{6 \times 5 \times 4 \times 3 \times 2 \times 1} = 3,838,380$$

Note that this formula works only for getting all 6 numbers correct. To determine the odds of getting, only 3 out of 6 numbers correct to win the \$3 Lotto prize, you must factor in the odds of getting 3 of the 6 numbers **WRONG**.

First, consider the number of ways to get 3 out of 6 numbers correct: $\frac{6 \times 5 \times 4}{3 \times 2 \times 1} = 20$

And the number of ways to have 3 losing numbers: $\frac{34 \times 33 \times 32}{3 \times 2 \times 1} = 5,984$

So the odds of matching *only* 3 numbers correctly and winning the \$3 Lotto prize are 1 in 32:

$$\frac{3,838,380 \text{ million outcomes}}{20 \times 5,984} = 32 = 119,680 \text{ winners}$$

To determine the overall odds for the game, you simply add the number of winners for each prize outcome and divide by the total number of outcomes.

How are Powerball’s odds calculated?

Powerball odds are calculated by combining the odds for two independent drawings happening simultaneously, since Powerball involves choosing five numbers correctly from a field of 59 and then choosing one number correctly from a field of 39. Many people get confused because they think the odds of matching just the Powerball should be 1 in 39. But that doesn’t take into account the outcome of the white ball numbers. The odds for matching just the Powerball must factor in NOT matching ANY of the white balls. So, while it’s true that the odds of matching the red Powerball are 1 in 39, the odds of matching *only* the red Powerball are actually 1 in 62.