FLORIDA™ LOTTO with XTRA

6-of-6 LOTTO Odds Calculation

According to the rules of probability, the number of combinations of n items taken r at a time are:

$$\frac{n!}{r!\,(n-r)!}$$

where $n! = n * (n-1) * (n-2) * \ldots * 2 * 1$.

This rule applies to situations where the order of the items chosen is irrelevant, such as the drawing of 6 numbers out of 53 as used in the LOTTO game.

In the LOTTO game, n =53 and r = 6. When the formula above is calculated with these values for n and r, the result is 22,957,480.

$$\frac{53!}{6! * 47!}$$

$$= \frac{53 * 52 * 51 * 50 * 49 * 48 * 47!}{6 * 5 * 4 * 3 * 2 * 1 * 47!}$$

$$= \frac{53 * 52 * 51 * 50 * 49 * 48}{6 * 5 * 4 * 3 * 2}$$

$$= 22{,}957{,}480$$

This means that there are 22,957,480 different ways in which 6 numbers can be chosen from a total of 53 numbers. Therefore, the odds of correctly choosing the winning combination is 1 to 22,957,480.

FLORIDA Lottery™

5-, 4- & 3-of-6 LOTTO Odds Calculation

The formula to determine the probability of selecting Z correct out of R draws from N numbers is as follows:

$$\frac{\dfrac{R!}{Z!\,(R-Z)!} * \dfrac{(N-R)!}{((N-R)-(R-Z))!\,(R-Z)!}}{\dfrac{N!}{R!\,(N-R)!}}$$

where $R! = R * (R-1) * (R-2) * \ldots * 2 * 1$.

Using four-out-of-six as an example, the above formula is:

$$\frac{\dfrac{6!}{4! * 2!} * \dfrac{47!}{45! * 2!}}{\dfrac{53!}{6! * 47!}}$$

$$= \frac{\dfrac{6 * 5 * 4!}{4! * 2 * 1} * \dfrac{47 * 46 * 45!}{45! * 2 * 1}}{22{,}957{,}480}$$

$$= \frac{\dfrac{6 * 5}{2} * \dfrac{47 * 46}{2}}{22{,}957{,}480}$$

$$= \frac{15 * 1{,}081}{22{,}957{,}480}$$

$$= \frac{16{,}215}{22{,}957{,}480}$$

$$= \frac{1}{1.415.82}$$