

Chances Part 3: Winning the Sweet Million & Other Lottery Games

1. Winning the Color Pick Game

When choosing 3 colors out of 5 total possible color choices, the **total number of combinations** is...

Explain where $5 \times 4 \times 3$ comes from.

5 colors then 4 colors then 3 colors

Explain why it ends at 3 and does not keep going.

You only need 3 colors to win the game same

The numerator:
60 is the total number of permutations

$$\frac{5 \times 4 \times 3}{3 \times 2 \times 1} = \frac{60}{6} = 10$$

Explain where $3 \times 2 \times 1$ comes from.

their one set of winning colors

The denominator:
6 is the number of ways each combination can be arranged.

Why is 60 being divided by 6?

When you divide 60 by 6 you get 10 which is all the combinations groups

10 is the total number of combinations

There is only 1 winning combination of colors, so the **probability of winning** is

What does the 1 represent?

only one group wins

$$\frac{1}{10}$$

Why is the 10 in the denominator and the 1 in the numerator?

cause only one group of color wins and 10 is the total combination of colors.