

Name _____ Date: _____

Winning the Sweet Million & Other Lottery Games

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.

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

The numerator:
60 is the total number of permutations

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

10 is the total number of combinations

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

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

Why is 60 being divided by 6?

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

What does the 1 represent?

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

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