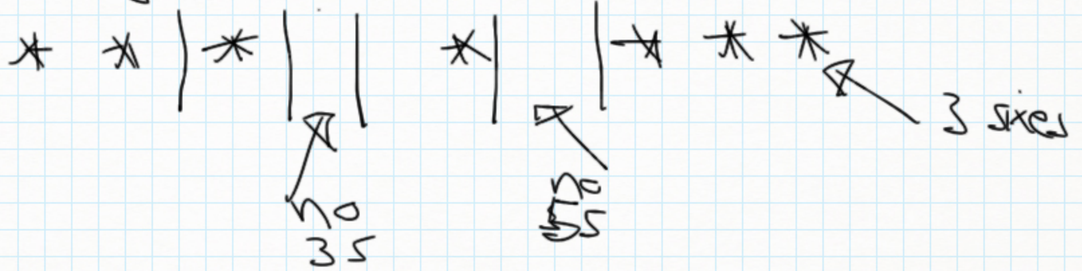
You roll seven identical six-sided dice simultaneously. How many different outcomes are possible? (For instance, one possible outcome is three 2s, one 6, one 5, and two 1s.)

From Fat Chance, Combinations with repetitions 02 09 2021

Stars + Bars Picture of one outcome [1] [2] [6] [6] [4] [5] [1]

= [1] [1] [2] [4] [6] [6] [6]

We have 7 *s and 6-1 bars



Ans: $\binom{12}{5} = \binom{12}{7}$