Exercise S10

vrijdag 29 mei 2020 11:28

the number of ways in which one can choose

M balls from N different balls is

$$\binom{N}{M}$$

Furthermore, the number of ways to assign these M balls to g urns is the number of mappings from an M-set to a g-set, which is known to be g^M

$$\binom{N}{M} = \frac{N!}{M!\,(N-M)!} = \frac{1}{M!}\,\frac{\text{"numbers from 1 to } N \text{, multiplied"}}{\text{"numbers from 1 to } N-M \text{ multiplied"}} = \frac{\text{"numbers from } N-M+1 \text{ to } N \text{, multiplied"}}{M!} = \frac{N(N-1)\dots(N-M+1)}{M!}$$

$$\frac{N(N-1)\dots(N-M+1)}{M!} = \frac{N(N-1)\dots(N-M+1)\;(N-M)!}{M!\;\;(N-M)!} = \frac{N!}{M!\,(N-M)!} = \binom{N}{M}$$