- You have n pieces of candy
- There are K distinguishable kids

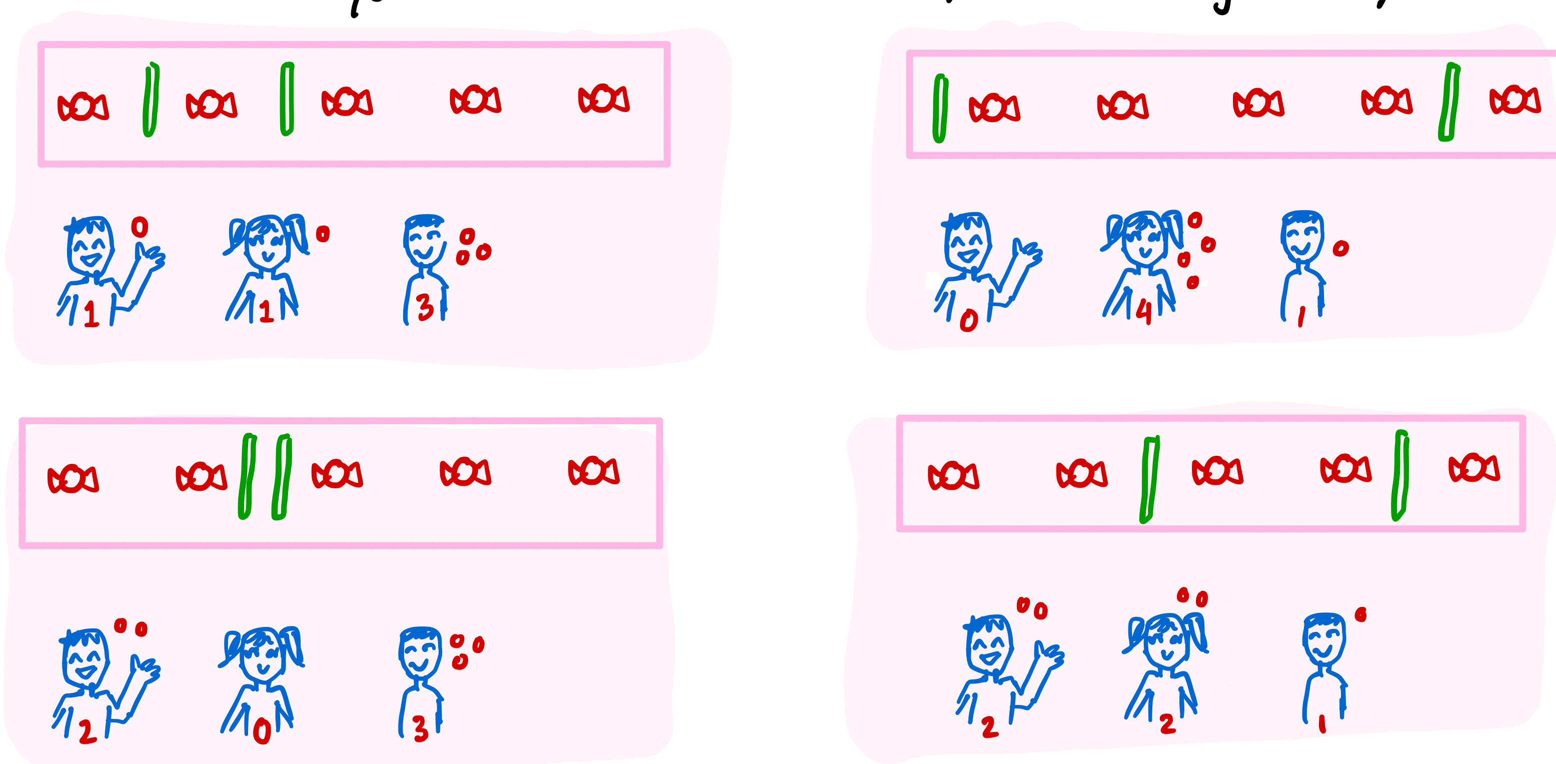
$n=5$

$K=3$

- Introduce $K-1$ dividing bars

$K-1=2$

These bars let you visualize different ways of alloting candy — ex:



Each "super arrangement" corresponds to a candy distribution.

- Awesome now we're set up a bijection between super arrangements and candy distributions
- Since we have a bijection, this means that we can count the candy distributions by just counting the super arrangements

... so now, let's just figure out how to count super arrangements

We have $(n + k-1)$ objects (object := or)

So how do we arrange the $n+k-1$ objects?
It matters whether the object is candy or a bar...

- One way of thinking about each arrangement is like:
  - Place $n+k-1$ objects in a line

  - Pick $k-1$ of them to be the bars

  - So that the rest ($(n+k-1) - (k-1) = n$) are candy

- This leads to the formula:

$$\binom{n+k-1}{k-1}$$

- Also note that you could have picked the candy first so:

$$\binom{n+k-1}{n}$$ also works the same.