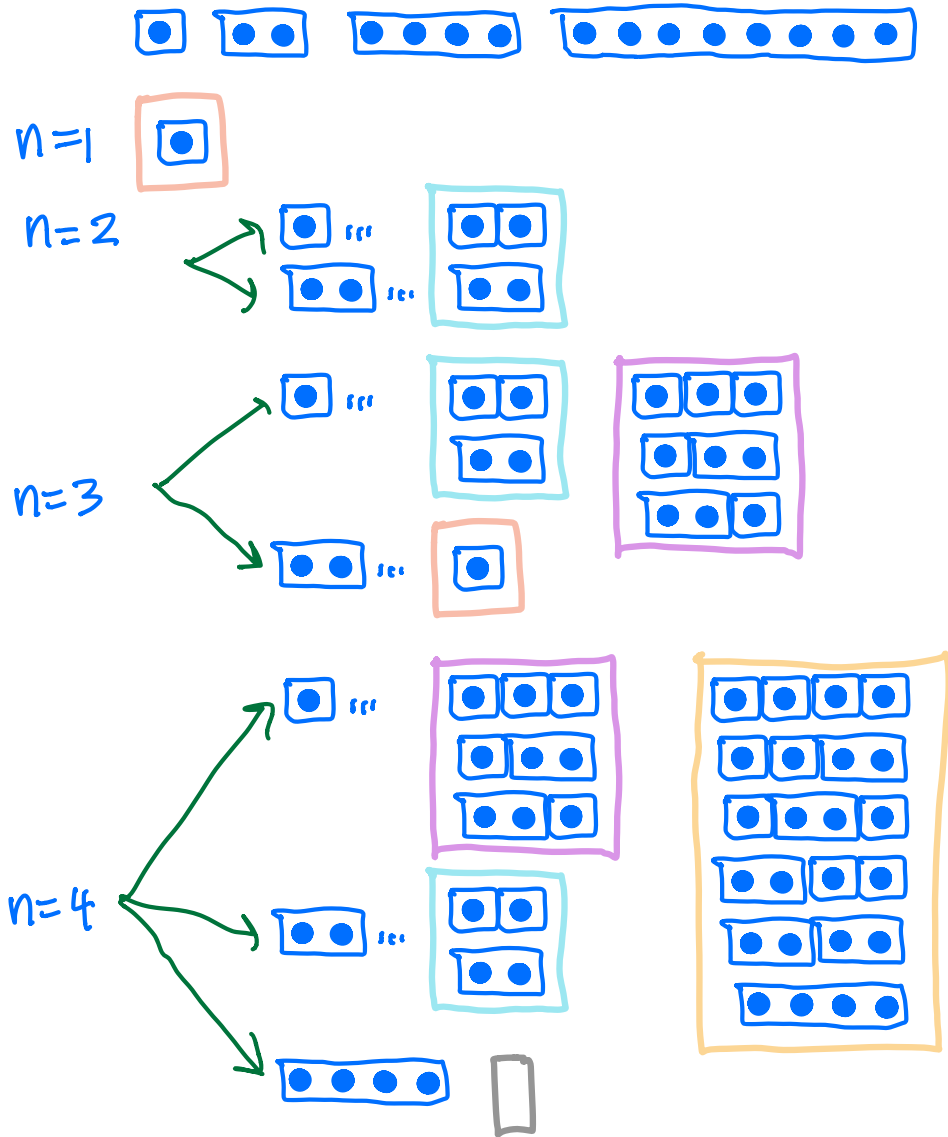


# Office Hours, Wed Feb 3

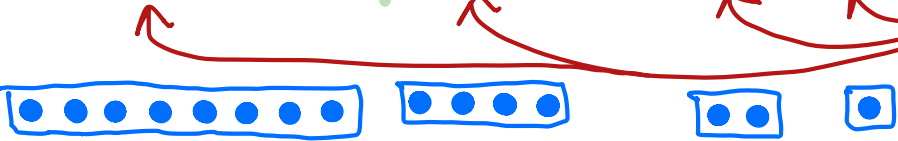
Old Exam: SIS Exam 1 [3]

Count ways to fill a tube of length 8 using sticks of length 1, 2, 4, 8

$n=8$



$n$	0	1	2	3	4	5	6	7	8
$f(n)$	1	1	2	3	6				



n	0	1	2	3	4	5	6	7	8
f(n)	1	1	2	3	6	10	18	31	56

$$g(t) = \sum_{n=0}^{\infty} f(n)t^n \quad \text{generating function}$$

$$g(t) = \frac{1}{1-t-t^2-t^4-t^8}$$

n	0	1	2	3	4	5	6
$1/(1-7t^2-2t^3+4t^4)$	1	0	7	2	45	28	...
$1-7t^2-2t^3+4t^4=0$	4	-2	-7	+1	Σ to 0		

$$-4t^4 + 2t^3 + 7t^2 = 1$$

