Find the # of rearrangements.

of: ex pad. $3 \cdot 2 \cdot 1 = 6$

pad apd
adp pda
dpa dap

ex dad

dad
add
dda

3

ex kook

1. as if all different.

$4! = \frac{24}{2! \cdot 2!} = 6$

---

ex alâbämä

$210 = \frac{7!}{4!}$ → alâbämä
älabämä

---

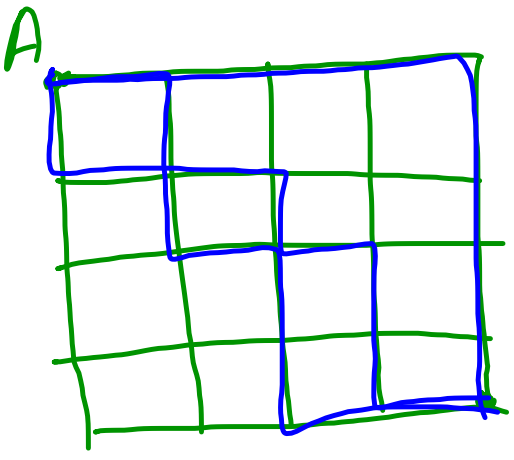
ex mississippi

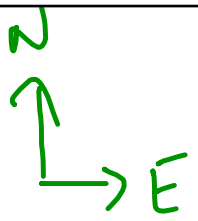
4 s's
4 i's
2 p's

$$\frac{11!}{(4!)(4!)(2!)}$$

$$= \frac{11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5}{(4 \cdot 3 \cdot 2)(2)} = 990(35)$$

$= 34{,}650$

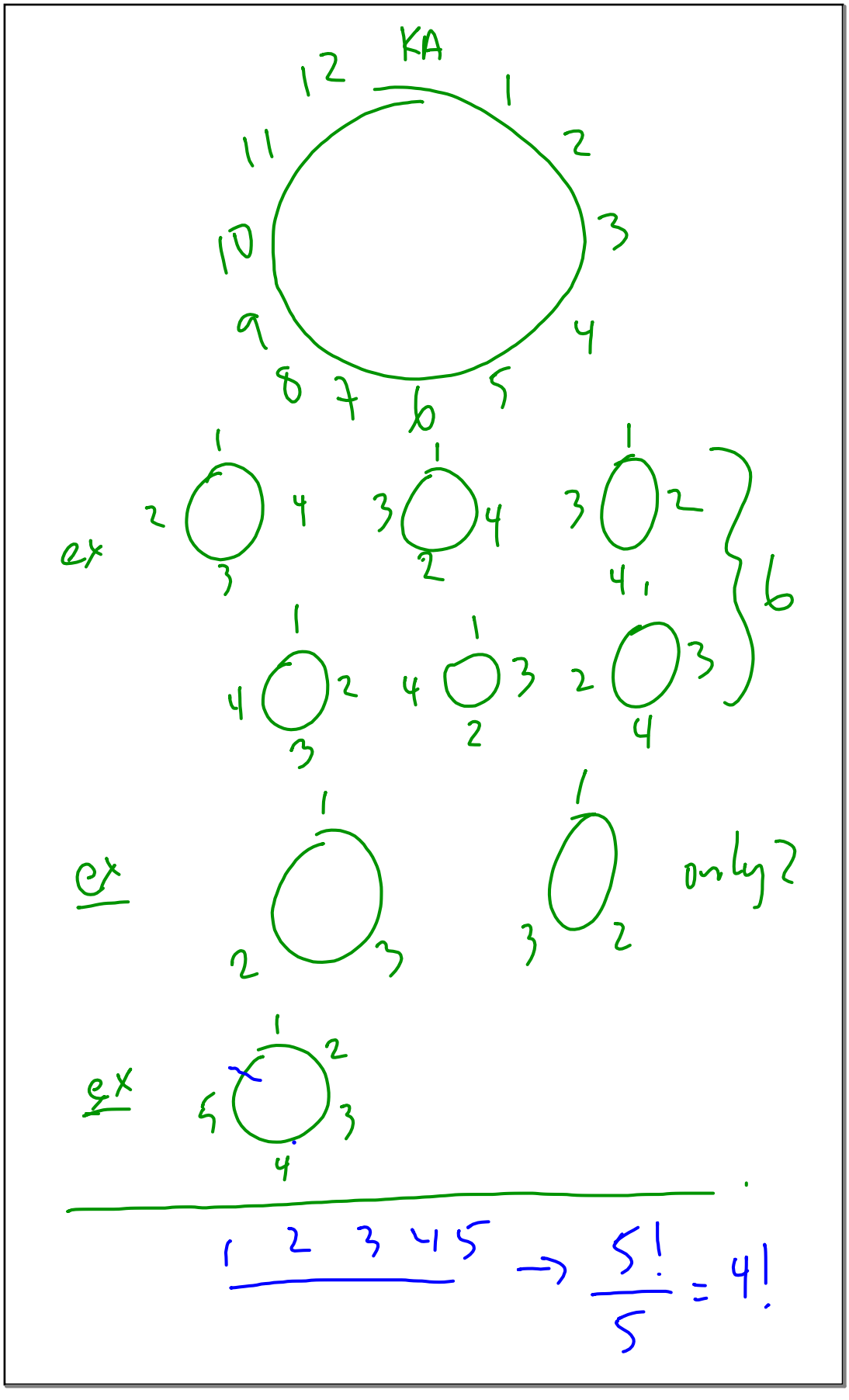




$$\frac{8 \cdot 7 \cdot 6 \cdot 5}{4 \cdot 3 \cdot 2} = \frac{8!}{(4!)^2} = 70$$

SSSSEEEE

SESSESEE



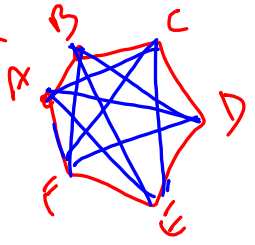
$$\frac{1\ 2\ 3\ 4\ 5}{} \rightarrow \frac{5!}{5} = 4!$$

17 28 flavors.

1 scoop + 2 scoop + 3 scoops

$28 + 28 \cdot 28 + 28 \cdot 28 \cdot 28$

24



n-gon.

${}_6C_2 = \frac{6 \cdot 5}{2!} = 15$

$15 - 6 = 9$

${}_nC_2 = \frac{n(n-1)}{2!} - n$

25

${}_nC_2 = 45$

$\frac{n(n-1)}{2!} = 45$

$n(n-1) = 90$

$n^2 - n - 90 = 0$

$(n-10)(n+9) = 0$

$n = 10$

---

ex ${}_{10}P_3 = 10 \cdot 9 \cdot 8$

ex ${}_{10}C_3 = \frac{10 \cdot 9 \cdot 8}{3!}$

$${}_nP_r = \frac{n!}{(n-r)!}$$

$${}_nC_r = \frac{n!}{r!(n-r)!}$$