Question 1

n balls, m red $\Leftarrow$ sample

$N(\text{Total}) = {}^{n}C_{k}$

choose k balls with i red. $\underbrace{}_{\text{favorable}}$

$N(\text{favorable}) \sim \underset{\Downarrow}{n-m} \quad \underset{\Downarrow}{m}$

$\qquad\qquad\qquad\quad k-i \qquad i$

$= {}^{n-m}C_{k-i} \times {}^{m}C_{i}$ $\Rightarrow (k-i)$ non-red

Prob = ✓

Question 12

Cases?

No need $\rightarrow$ No of kings

(a)

_ _ _ _ .... _ $\leftarrow {}^{4}C_{1}$

$\uparrow$ 13th

$N(\text{total}) = {}^{52}P_{13}$ | $N(\text{favorable}) = {}^{4}C_{1} \times {}^{51}P_{12}$

Class doubts

$$\left(\text{probability} = \frac{\text{favorable count}}{\text{total count}}\right)$$

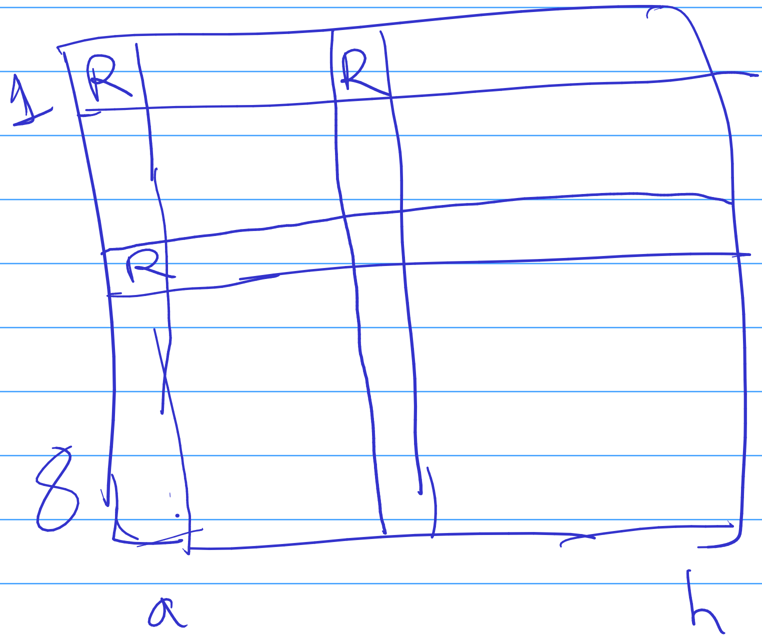
(swiss knife)

(b) $N(\text{favorable}) = {}^4C_1 \times {}^{48}P_{12}$

Question 3

64 squares

8 rooks



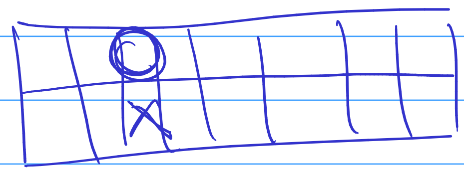
Unordered $\xrightarrow{\times 8!}$ Ordered

Number ways

→ Always 1 rook per row

→ First row = 8 ways (a to h)

2nd " = 7 ways



3rd " = 6 ways

⋮

1

$N(\text{favorable}) = 8!$

$N(\text{total}) = \cancel{{}^{64}P_8}$ or ${}^{64}C_8$

$${}^{64}P_8 = {}^{64}C_8 \times 8!$$

Another way

$N(\text{favorable}) = 64 \times (64 - 15) \times (64 - \ldots)$