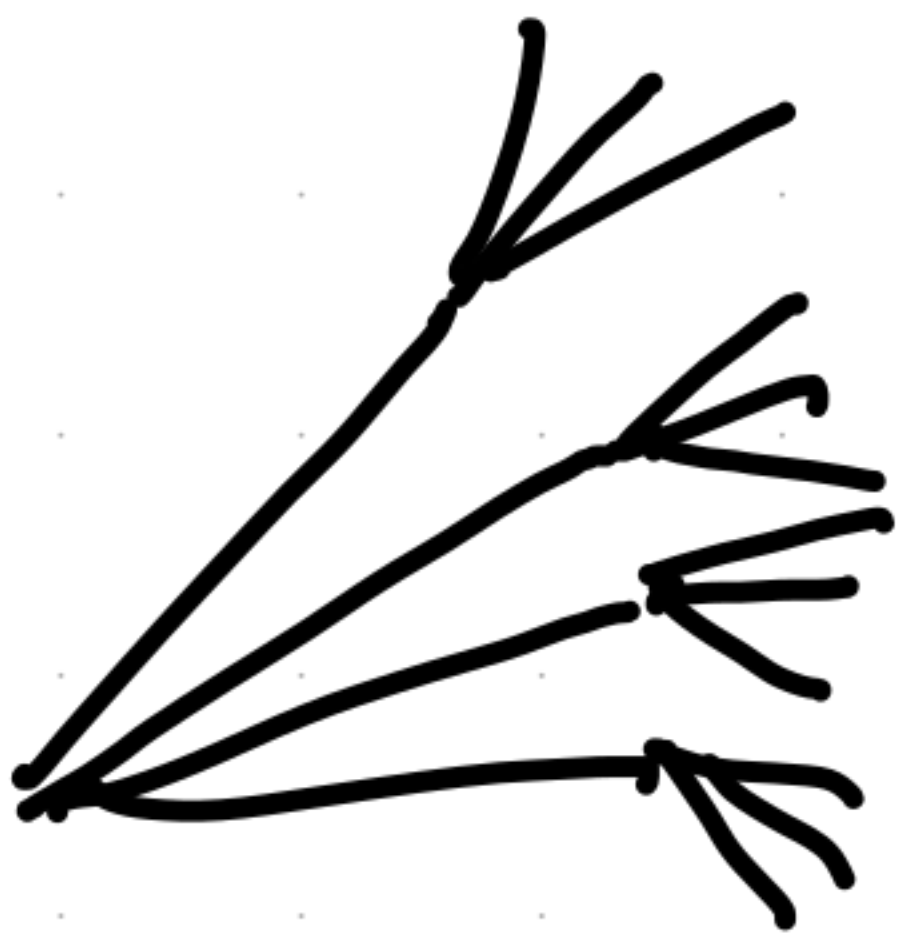
$\{C, B, M, Bl\}$

Q1
Permutations

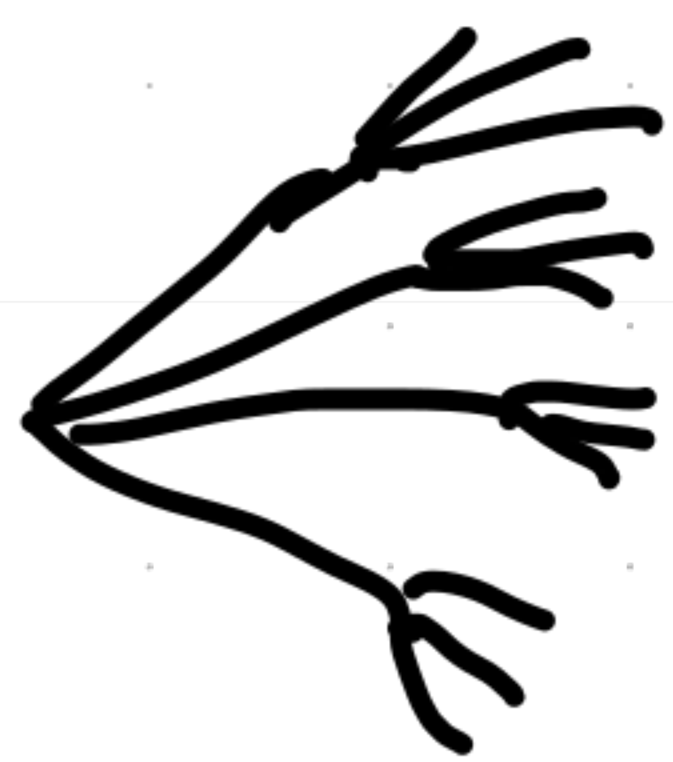


$4 \cdot 3 = 12$

$_4P_2 = \frac{4!}{2!} = 4 \cdot 3$

Q2 How many ways to pick 2 teams for final?

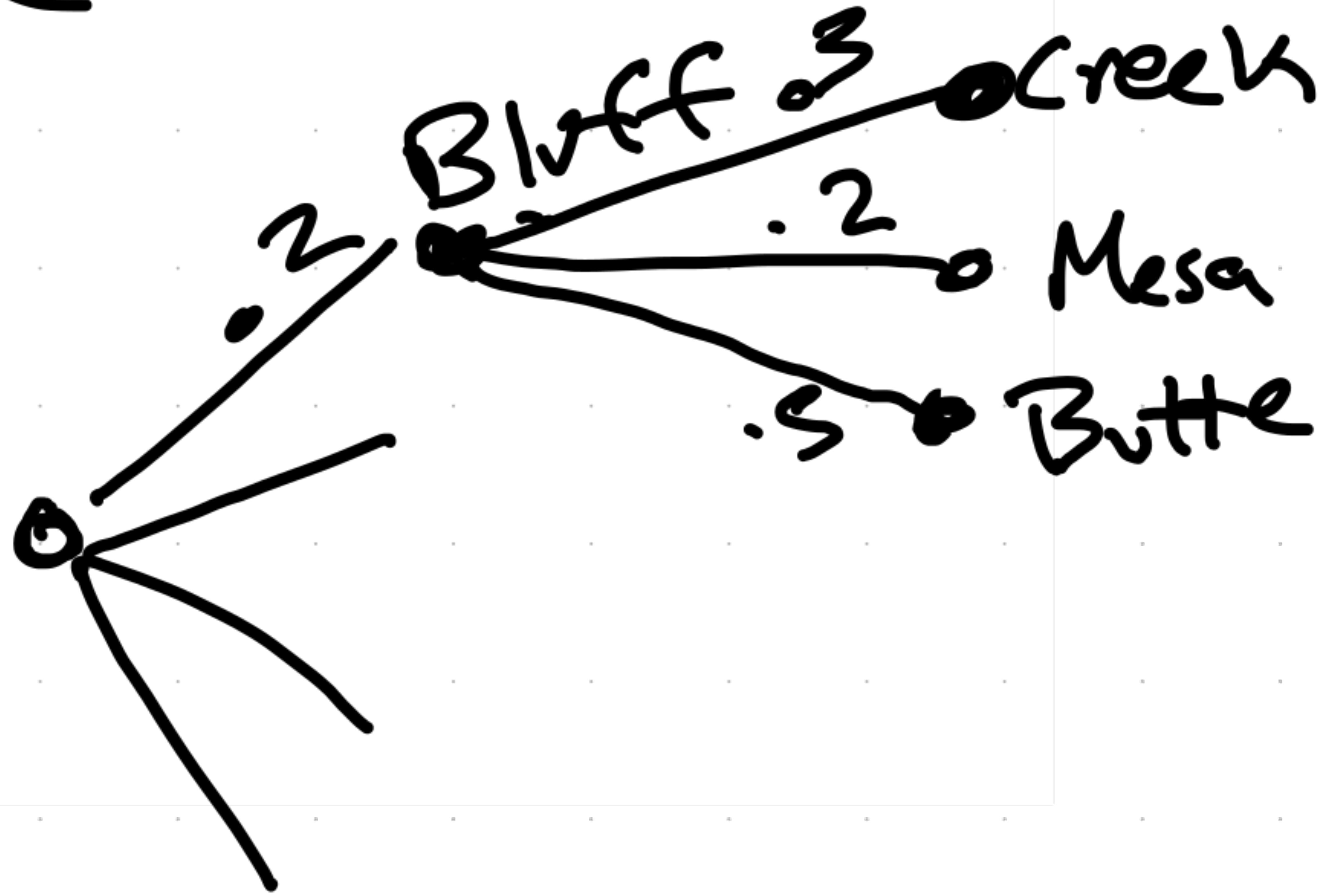
$\{B, Bl, M, C\}$



CM
MC

$$\frac{{}_nP_r}{r!} = {}_nC_r$$

P(Creek 2nd/Bluff 1st)?



$$P(A) = \sum^{B} P(A|B)\,P(B)$$

$P(A)$? = creek 2nd

= P(creek 2nd | mesa 1st) P(mesa 1st)
+ P(creek 2nd | Butte 1st) P(Butte 1st)
+ P(creek 2nd | Bluff 1st) P(Bluff 1st)

$_4P_2 = |\Omega|$ = # ways to pick w/c in final

$\{M, Cr, Bl, Bu\}$

Mesa wins, Bluff 2nd

Creek wins Bluff 2nd

$(?, ?)$

(M, Bl)

(Cr, M)

Ω

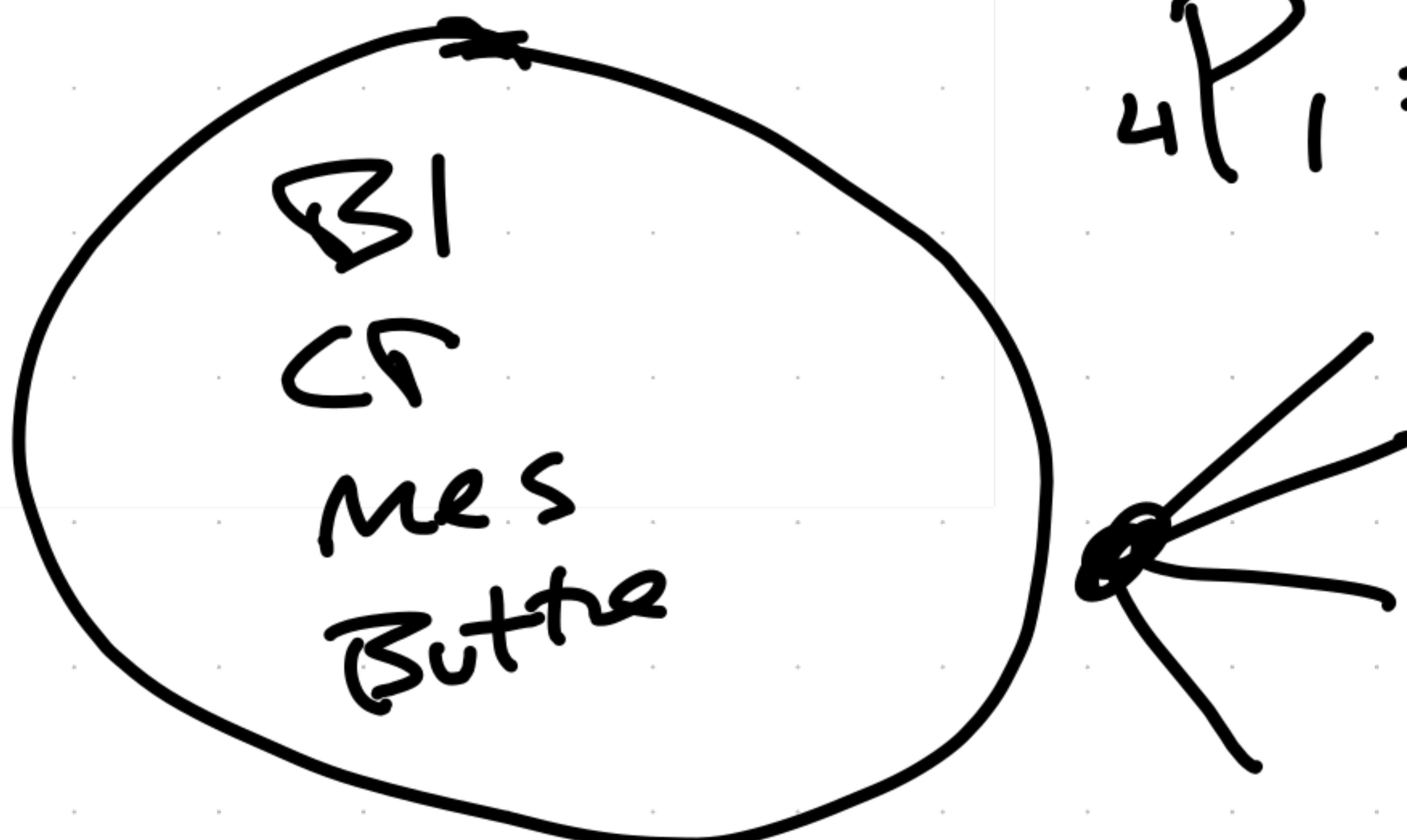
(Bu, Cr)

$4 \cdot 3 = 12$

$_4P_2 = 12$

$|\Omega| = ?$

Ω = all of the possible losers in the final



$${}_4P_1 = \frac{4!}{3!} = 4$$

$$|\Omega| = 4$$

Ω = pairs of teams in final

${}_4C_2$ $\quad |\Omega| = {}_4C_2$

$$\text{r.v.} = X : \text{event} \in \Omega \longrightarrow \mathbb{R}$$

$$E[X] = \text{e.v.} \; X = \sum_{x_i} p(x_i)\, x_i$$

Mesa

Butte $.4 \cdot .4$

Mesa 1st $\wedge$ Butte 2nd $-(100)$

that does not occur $(+5)$

$$E[X] = -(.4 \cdot .4)\,100 + (1-(.4 \cdot .4))\,5$$