Homework 7 problem 3

3a) A=140u are dealt two koo's"
B="some other player has a pair of koo's"

ways to show independence between A & B

- (1) P(A n B) = P(A) * P(B)
- 3 P(B/A) = P(B)

P(B|A)=0 $P(B)\neq 0$

 $P(B|A) \neq P(B)$

so A & B are not independent

$$P(A) = \frac{13}{52} * \frac{13}{52} = \frac{1}{16}$$
 independence

ist Acer's gets Ace 25

P(A2) * P(C2/A2)

Same person

getting Ace

955

= 13 39 + 13 + 13 51 51 51 18+ 51 51 18+ 62 51 501 18+ 62 51 5

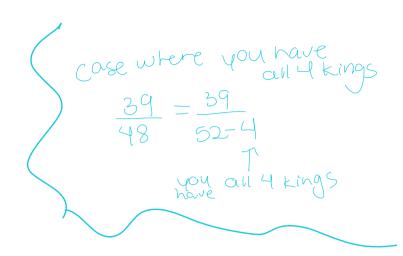
- you already have kg's

- no one else can get

Kg's in the first

deck

so only 51 options for



3 c) you know you don't have any acres of hearts are A + c independent

D = you don't have any Ace's of hearts

$$P(A|D) = \frac{13}{51} * \frac{13}{51}$$

in first deck prob that someone else gets the Ace of of's is I be we know you don't have it.

P(C|D) = 1 * P(the same person
you don't howe
any...in the 2nd
deck)

$$-\frac{1}{3} = \frac{1}{3}$$
3 players
that can,
get Aces's

P(AnClD) = P(AlD) ** P(ClD) conditional independence.

 $P(A) * P(C) = P(A \cap C)$

independence

2 events clan't affect each other's outcomes

P(BIA)=P(B)
B is not affected

by the presence of A

conditional inclependence

A & B are conditionally
independent given

C.

P(A) C nB) = P(A) C) in the presence of C, B + A do not offect one another.

HW7 2C)

$A = \{1,2,3,5\}$, $B = \{1,4\}$ $C = \{1,2,4,7\}$

Hornework 6 1f) 1/2 - fast ball probof 1/3 - breaking hitting 1/4 - changeup probot nitting exactly 7 we miss2 pitches 7 1'S & 2N'S

types of pitches

for 2 N's

- D born fastballs
- 2) both breaking
- 3) both changetips
- (9) I fast, I breaking
- 5) | fast, 1 changeup
- 6) 1 breaking, 1 changeup
 - 1) both N's fastballs

 FFF BBBCCC

 (1) 2 (1) * (1) 3 * (1) 3

 Prob for I

 Seq yence

$$3*\left(\frac{1}{2}\right)^2\left(\frac{1}{2}\right)*\left(\frac{1}{3}\right)^3*\left(\frac{1}{4}\right)^3$$

2) lbreaking l changeup

FFF BBB C CC
(1)2/3/

fast breating changeup number of Sequences; (3) * (3) = 9

 $9*(\frac{1}{3})^3(\frac{1}{3})^2(\frac{2}{3})(\frac{1}{4})^2(\frac{3}{4})$

Groupwork 6problem 1e)
you see that this bitstring has
more 0's than 1's.

Prob there are more 0's than 1's
in total.

E = event that there are more 0's than is in both strings in total

F = the first bitstring has more zeros than 1s

 $P(E|F) = P(E \cap F)$ conditional prob.

 $P(\mp) = 5/16$ found in part c)

P(EnF) break this up into cases: first bitstring second bitstring 1) 4 zeros (0000) needs at teast one zero. " at least one" > use the case I has 15 outcomes 16 - 1 = 15 (2rd bitstring is 1111) eras (0100) bitstring and bitstring has to have at least 2 Zeros 16 - # of outcomes for less than 2 zeros

1000,000,000,000,000 16-5= 11 out comes

(4)=4 411 = 44 adding up both cases 1*15+4*11=59 $P(E|F) = \frac{601256}{5/16}$ $= \frac{69}{80}$

Probability roadmap

H & any other,
L bester

A any number

we know
this

(*26*26*10*10*10)

possible out-comes