lecture 3

4 (a).

$5 * 7 * 3 * 2 = 210$

7.

Firstly, make four man be seated, there are P(4,4) ways

Secondly, make eight women be seated, there are P(8,8) ways

so, the answer is $P(4,4) * P(8,8)$

19

Fristly, we choose 8 rows from 12 rows. There are $C(12,8)$ ways

Secondlg, we need to choose eight colum and sort it in the 12*12 chessboard . There are $P(12,8)$ ways.

Third, because there are five rooks are red and three rooks are blue, the number to place it is $8!/(5! * 3!)$

so, the answer is $C(12,8) * P(12,8) * 8!/(5! * 3!)$

30

(1). if there are only one parents

firstly, we arange 5 boys, P(5,5)/5

secondly, we arange 5 girls, P(5,5)

Thirdly, we arange the parents P(10,1)*P(2,2)

so, the answer is $P(5,5) * P(5,5) * P(10,1) * P(2,2)/5$

(2). if there are two parents

if the two parents seat together, the answer is $A1 = P(5,5) * P(5,5) * P(10,1)/5$

if the them seat separted, the answer is $A2 = P(5,5) * P(5,5) * P(10,2)/5$

so ,the answer is $A1 + A2$

61

(1)

that means if we have picked the position, the order of rooks is determined.

so the answer is $1/9!$

(2)

firstly, we find the positon of red rooks in the board of 5*5, there are P(5,5) ways

secondly, we find the positon of blue rooks in the board of 4*4, there are P(4,4) ways

while the total ways is $A1 = 9! * 9!/(4! * 5!)$

so, the answer is $(5! * 4!)/A1$