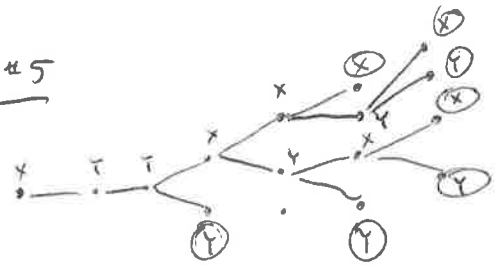
MA 300 HW #1

Section 9.2 #5, 14cde, 42

9.3 #7ab, 11c

9.2 #5



7 ways

9.2 #14

a _ _ _ _ _ _ _ _ (26 26 26 26 10 10 10)

$26^4 \cdot 10^3$ possibilities

~~**b**~~

c I E I F _ _ _ (10 10 10)

10^3 possible

d _ _ _ _ _ _ _

all distinct: $P(26,4)$ $P(10,3)$

ifs $P(26,4) \cdot P(10,3) = \frac{26!}{22!} \cdot \frac{10!}{7!}$

e A B _ _ _ _ _

$P(24,2)$ $P(10,3)$

(can't use A or B)

ifs $P(24,2) \cdot P(10,3) = \frac{24!}{22!} \cdot \frac{10!}{7!}$

9.2 #42

$$P(n+1,3) - P(n,3) = \frac{(n+1)!}{(n-2)!} - \frac{n!}{(n-3)!} = \frac{(n+1)!}{(n-2)!} - \frac{n!\,(n-2)}{(n-3)!\,(n-2)}$$

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

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

$$= \frac{n! \cdot 3}{(n-2)!} = 3\,P(n,2)$$

9.3 #7ab

a For symbols: 36^4

5 ——— : 36^5

6 ——— : 36^6

so it's $36^4 + 36^5 + 36^6$

b for no repeats, it's $P(36,4) + P(36,5) + P(36,6)$

9.3 #11c

QUICK

for "QU", 4! rearrangements.

for "UQ", also 4!

so it's $4! + 4!$