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CS 225

Quiz over weeks 7 and 8 material

1) a) 10 * 9 * 8 * 7 * 6 = 30,240 ways to form a line of 5 people.

   b) C(m,n) = m! / n!(m-n)!  = 10! / 5! (10-5)!  = $\frac{10 * 9 * 8 * 7 * 6 * 5 * 4 * 3 * 2 * 1}{5*4*3*2*1*5*4*3*2*1}$ = $\frac{10*9*8*7*6}{5*4*3*2*1}$ =

30,240 / 120 = 252 ways

2) a) starting with a, ending with e, means only 3 letters remain in the middle(b,c,d)

      3! = 3*2*1 = 6 strings possible.

   b) group 'de' as one character,  4! = 4*3*2*1 = 24 strings

3)      a) (n+r - 1)! / r!(n-1)! = (3 + 10 -1)! / 10!(3-1)! = 12! / 10!2! = 12*11 / 2 = 66 color combinations

      b) 3 possibilties, draw 5. $3^5$ = 243 color sequences

      c) count combinations of 8. (n + r - 1 ) ! / r! (n -1 )! = (2+8-1)! / 8!(2-1)! = 9! / 8! = 9 possible combinations with exactly 2 yellow beans

      d) count combinations of 8 red/green/yellow beans. (n+r-1)! / r!(n-1)! = (3+8-1)! / 8!(3-1) !

      = 10! / 8!2! = 10*9 / 2 = 45 possible combinations with at least 2  yellow beans