

Exercises Rosen p. 417

Permutations and Combinations

①

a, b, c
a, c, b
b, a, c
b, c, a
c, a, b
c, b, a

$$3! = 6$$

③

We fix a at the end.

⇒ only 6 letters to shuffle $6!$

⑤

— useless

⑦

$$P(9, 5) = \frac{9!}{4!} = 15, 120$$

⑨

$$P(12, 3) = 1, 320$$

11 a $\binom{10}{4} = 210$

b $\binom{10}{0} + \binom{10}{1} + \binom{10}{2} + \binom{10}{3} + \binom{10}{4} = 386$

c $2^{10} - \binom{10}{4} = 848$

d $\binom{10}{5} = 252$

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