

① BAT, BTA, TAB, TBA, ATB, ABT

② $7! = 5040$

③ a) $117 \cdot 116 \cdot 115 \cdot 114$ b) $\frac{117!}{113!}$

④ ${}_{14}P_8 = \frac{14!}{6!} = 121,080,960$

⑤ ${}_{317}P_2 = \frac{317!}{315!} = 100,172$

⑥ $11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 = 55,440$

⑦ ${}_{8}P_3 = 336$

⑧ a) $6 \cdot 5 = 30$

b) $\underline{1 \cdot 5} + \underline{5 \cdot 1} = 10$

⑨ "n" choices when you choose one item from a set.

⑩ "n!" choices when you choose n from n items.
= $\boxed{n!}$

⑬ a) ${}_{5}P_4 = 120$ b) $\frac{1}{120}$

⑭ a) ${}_{6}P_3 \cdot {}_{3}P_3 = 120 \cdot 6 = 720$

b) ${}_{3}P_3 \cdot {}_{3}P_3 \cdot 2 = 6 \cdot 6 \cdot 2 = 72$
(shelves)

c) ${}_{6}P_1 \cdot {}_{5}P_5 + {}_{6}P_2 \cdot {}_{4}P_4 + {}_{6}P_3 \cdot {}_{3}P_3 + {}_{6}P_4 \cdot {}_{2}P_2$
 $+ {}_{6}P_5 \cdot {}_{1}P_1 = 3,600$