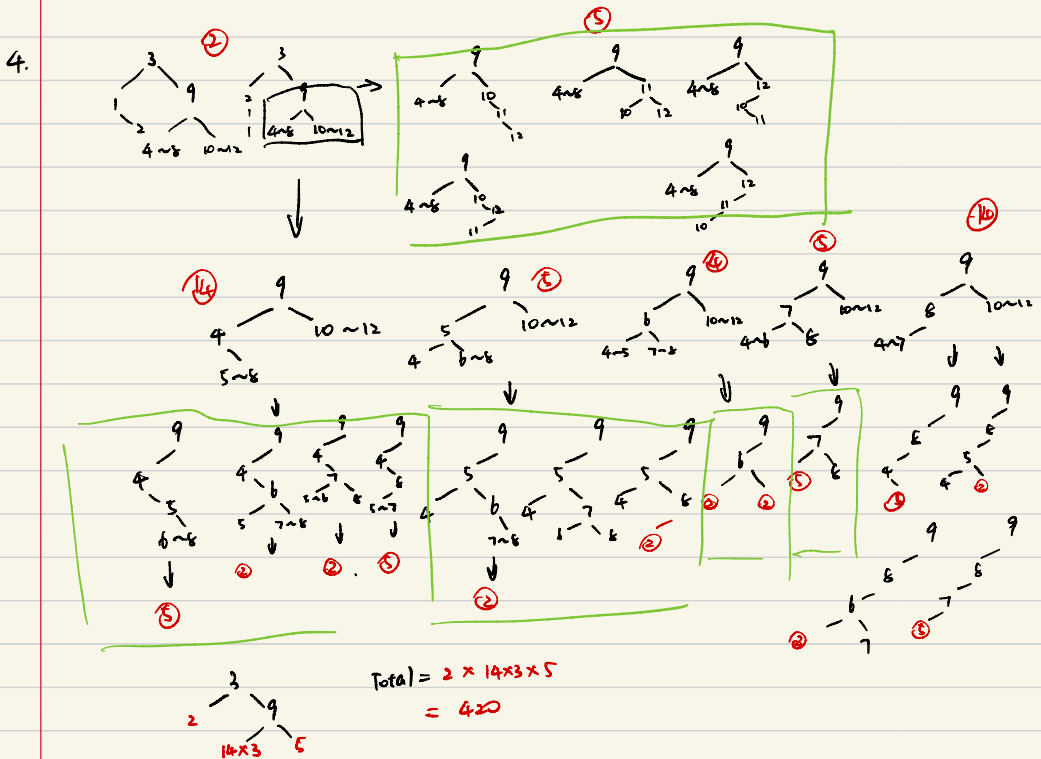


# Problem 1

1. a)  ${}^7C_5 = \frac{7!}{5!(7-5)!} = \frac{7 \times 6}{2} = 21$   
 b)  ${}^7P_5 = \frac{7!}{(7-5)!} = 2520$

2.  $13C_2 \times 4C_2 \times 4C_2 \times 11C_1 \times 4C_1 = 123552$

3.  $16 \times 15C_6 = 16 \times \frac{15!}{6!9!} = \frac{15 \times 14 \times 13 \times 12 \times 11 \times 10}{20 \times 12 \times 2} \times 16 = 6060$



$$\begin{aligned} 5. \quad {}_{10}P_4 &= \frac{10!}{(10-4)!} = \frac{10!}{6!} = 10 \times 9 \times 8 \times 7 \\ &= 5040 \end{aligned}$$