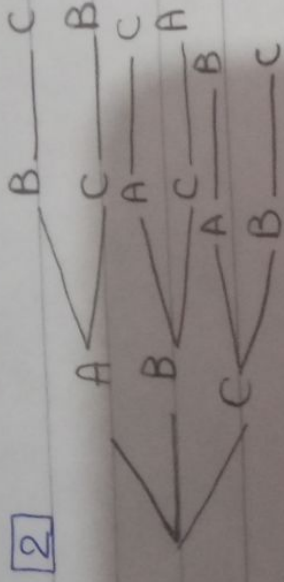


1. ${}^{12}C_4 \cdot {}^8C_4 \cdot {}^4C_4 = 34650$



3. $P(A) = {}^4C_{12} \cdot {}^3C_{12} = 109$

$P(B) = {}^8C_{12} \cdot {}^7C_{11} = 0381$

$P(\text{At least one item is defective}) = 1 - 0381 = 0619$

4. $P(\text{none defective}) = 02634$

$P(\text{one item is defective}) = 04945$

$P(\text{At least one is defective}) = 1 - 02634 = 07363$

5. $P(A \cup B) = \frac{10}{30} + \frac{15}{30} - \frac{5}{30} = \frac{20}{30}$

6. $P(A^c) = \frac{5}{8}$

$P(B^c) = \frac{1}{2}$

$P(A^c \cap B^c) = \frac{5}{8}$

$P(A^c \cup B^c) = \frac{1}{2}$

$P(A \cap B^c) = 0$

$P(A^c \cap B) = \frac{1}{2} - \frac{1}{2} = 0$

7. $P(\text{Rolling a 7 all three rolling}) = \frac{125}{216}$

8. $K = 3$

9. $P(A^c \cap B^c) = 02$