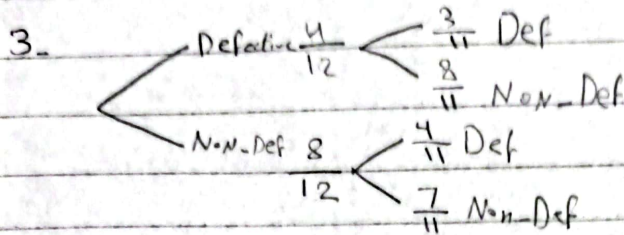
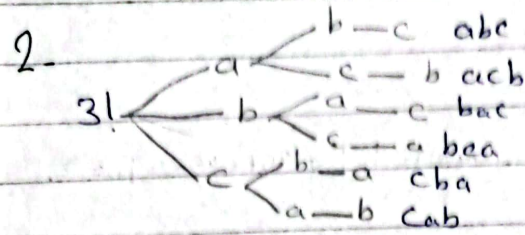


①

Hw?

$$1. {}^{12}P_4 \times 3! = \frac{12!}{8!} \times 3! = 12 \times 11 \times 10 \times 3!$$



$$1) P(A) = \frac{{}^4C_2}{{}^{12}C_2} = \frac{4}{12} \times \frac{3}{11} = \frac{1}{11}$$

$$P(B) = \frac{{}^8C_2}{{}^{12}C_2} = \frac{8}{12} \times \frac{7}{11} = \frac{14}{33}$$

$$ii) P(\text{at least one item is Def}) = 1 - P(\text{non}) = 1 - \frac{14}{33} = \frac{19}{33}$$

$$4. i) P(\text{non is Def}) = \frac{{}^{10}C_3}{{}^{15}C_3} = \frac{10}{15} \times \frac{9}{14} \times \frac{8}{13} = \frac{24}{91}$$

$$ii) P(\text{exactly one is Def}) = \frac{5}{15}$$

$$iii) P(\text{at least one is Def}) = 1 - P(\text{non}) = 1 - \frac{24}{91} = \frac{67}{91}$$

5-

	boy	girl	Total
Mans	5	10	15
Not Mans	5	10	15
Total	10	20	30

$$P(\text{boy or from mans}) = \frac{14}{30} \times \frac{15}{30} = \frac{1}{6}$$

$$P(A \cup C) = P(A) + P(C) - P(A \cap C)$$

$$= \frac{15}{30} + \frac{10}{30} - \frac{5}{30} = \frac{20}{30} = \frac{2}{3}$$

$$6. i) P(\bar{A}) = 1 - P(A) = 1 - \frac{3}{8} = \frac{5}{8}$$

$$ii) P(\bar{B}) = 1 - P(B) = 1 - \frac{1}{2} = \frac{1}{2}$$

$$iii) P(\bar{A} \cap \bar{B}) = P(\overline{A \cup B}) = 1 - P(A \cup B) = 1 - [P(A) + P(B) - P(A \cap B)] = 1 - [\frac{3}{8} + \frac{1}{2} - \frac{1}{2}] = 1 - \frac{3}{8} = \frac{5}{8}$$

$$iv) P(\bar{A} \cup \bar{B}) = P(\overline{A \cap B}) = 1 - P(A \cap B) = 1 - \frac{1}{2} = \frac{1}{2}$$

$$v) P(A \cap \bar{B}) = P(A - B) = P(A) - P(A \cap B) = \frac{3}{8} - \frac{1}{2} = \frac{1}{8}$$

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

②

$$7 - P(\text{at least } 7) = 1 - P(\text{non } 7) = 1 - \left(\frac{30}{36}\right)^3 = \frac{91}{216}$$

$$8 - \sum P(X) = k^2 - 8 \quad k = ?$$

$$k^2 - 8 = 1 \quad k^2 = 9 \quad \boxed{k = \pm 3}$$

$$9 - P(\bar{A} \cap \bar{B}) = P(\overline{A \cup B}) = 1 - P(A \cup B) = 1 - [P(A) + P(B) - P(A \cap B)] = 1 - [0.35 + 0.45 - 0] = 0.2$$