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20. $\Omega = \{1, 2, \dots, 100\}$ $A = \{1, 2\}$ $B = \{2, 3\}$ $C = \{3, 4\}$

$$P(A|B) = \frac{1}{2} \quad P(B|C) = \frac{1}{2} \quad P(A) = P(B) = P(C) = \frac{1}{50}$$

$$P(A|B) > P(A) \quad P(B|C) > P(B) \quad \text{但} \quad P(A|C) = 0 < P(A)$$

24.

(1) $p = \frac{1}{2} \times \frac{10}{50} + \frac{1}{2} \times \frac{18}{30} = 40\%$

(2) $p = P(\text{第2次是一等品} | \text{第1次是一等品})$

$$= \frac{P(\text{两次都是一等品})}{P(\text{第一次是一等品})} = \frac{0.1 \times \frac{9}{49} + 0.3 \times \frac{17}{29}}{0.4} = 0.49$$

25.

$$p = \frac{r}{r+b} \frac{r+a}{r+b+a} \frac{b}{r+b+2a} \frac{b+a}{r+b+3a}$$

28 (1) $\frac{1}{3} \times \frac{3}{10} + \frac{1}{3} \times \frac{7}{15} + \frac{1}{3} \times \frac{5}{25} = \frac{29}{90}$

31 (1) $\frac{1}{3} \times \frac{2}{6} + \frac{1}{3} \times \frac{4}{6} + \frac{1}{3} \times \frac{3}{6} = \frac{1}{2}$

34 $P(B) = P(B|A)P(A) + P(B|\bar{A})P(\bar{A}) = P(B|A)[P(A) + P(\bar{A})] = P(B|A)$

$$P(B|A) = \frac{P(AB)}{P(A)} = P(B) \Rightarrow P(AB) = P(A)P(B) \Rightarrow \text{独立}$$

38 (1) $0.5 \times 0.4 \times 0.2 + 0.5 \times 0.6 \times 0.2 + 0.5 \times 0.4 \times 0.8 = 0.26$

(2) $1 - 0.5 \times 0.4 \times 0.2 = 1 - 0.04 = 0.96$

39 (1) $P_A P_B P_C$

(2) $1 - (1 - P_A)(1 - P_B)(1 - P_C)$

(3) $1 - (1 - P_A^2)(1 - P_B^2)(1 - P_C^2)$

(4) $P_D^2 [1 - (1 - P_A)(1 - P_B)(1 - P_C)]$

(5) $P_C [1 - (1 - P_A)^2] (1 - (1 - P_B)^2) + (1 - P_C) [1 - (1 - P_A P_B)^2]$