

SUCCESS

$$P(\bar{A}) = 0.5$$
$$P(\bar{B}) = 0.25$$
$$P(\bar{C}) = 0.15$$

$$P(A) = 0.5 \quad P(B) = 0.75 \quad P(C) = 0.85$$

$L_{\beta} = \dots$

$$LL_B = \frac{1}{2} \left(\frac{1}{\mu_B} + \frac{1}{\mu_C} \right)$$

$$P(LL_A) = \frac{1}{5} \quad P(LL_B) = P(LL_C) = \frac{2}{5}$$

a) a) $P(A \cup B \cup C) = 1 - P(\bar{A} \cap \bar{B} \cap \bar{C}) \stackrel{\text{indep}}{=} 1 - P(\bar{A})P(\bar{B})P(\bar{C}) =$
 $= 1 - 0.5 \cdot 0.25 \cdot 0.45 = 0.9875$

$$\begin{aligned} \text{a.2)} \quad & P((L_L \cap A) \cup (L_B \cap B) \cup (L_C \cap C)) = \\ & = P(L_L \cap A) + P(L_B \cap B) + P(L_C \cap C) = \\ & = P(L_L)P(A) + P(L_B)P(B) + P(L_C)P(C) \\ & = \frac{1}{3} \cdot 0.5 + \frac{2}{3} \cdot 0.25 + \frac{2}{3} \cdot 0.95 = 0.1 + 0.3 + 0.34 = 0.74 \end{aligned}$$

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$$\begin{aligned}
 &= P(U_1 \cap U_2 \cap U_3 \cap U_4 \cap U_5) + P(U_1 \cap U_2 \cap U_3 \cap U_4) + P(U_1 \cap U_2 \cap U_3 \cap U_5) \\
 &+ P(U_1 \cap U_2 \cap U_4 \cap U_5) + P(U_1 \cap U_3 \cap U_4 \cap U_5) + P(U_2 \cap U_3 \cap U_4 \cap U_5) \\
 &+ P(U_1 \cap U_3 \cap U_4) + P(U_1 \cap U_3 \cap U_5) + P(U_1 \cap U_4 \cap U_5) + P(U_2 \cap U_3 \cap U_4) \\
 &+ P(U_2 \cap U_3 \cap U_5) + P(U_2 \cap U_4 \cap U_5) + P(U_3 \cap U_4 \cap U_5) \\
 &+ P(U_1 \cap U_3) + P(U_1 \cap U_4) + P(U_1 \cap U_5) + P(U_2 \cap U_3) + P(U_2 \cap U_4) \\
 &+ P(U_2 \cap U_5) + P(U_3 \cap U_4) + P(U_3 \cap U_5) + P(U_4 \cap U_5) \\
 &+ P(U_1) + P(U_2) + P(U_3) + P(U_4) + P(U_5) \\
 &= P(U_1)^3 + P(U_2)^3 + P(U_3)^3 \\
 &= \left(\frac{1}{5}\right)^3 + \left(\frac{2}{5}\right)^3 + \left(\frac{3}{5}\right)^3 = \frac{1}{125} + \frac{8}{125} + \frac{27}{125} = \frac{36}{125} = 0.288
 \end{aligned}$$

$$\begin{aligned} 52) \quad P(U_a, 1LL_b, 1LL_c) \cdot 3! &= P(U_a) P(1LL_b) P(1LL_c) \\ &= \frac{1}{4} \cdot \frac{2}{3} \cdot \frac{2}{3} \cdot 3! \\ &= \frac{4}{18} = 0.222 \end{aligned}$$