

P1/

$$a) \begin{array}{ccccccc} 0 & 0 & | & 0 & 0 & | & 0 & 0 & \dots & 0 & | & 0 & 0 & | & 0 & 0 \\ x_1 & 1 & & x_2 & 2 & & x_3 & & & N-2 & & x_{N-1} & N-1 & & x_N \end{array}$$

$$\binom{M-1}{N-1}$$

$$b) 1) M=20 \quad N=4 \quad \binom{19}{3}$$

$$2) M=20 \quad N=5 \quad \binom{19}{4} + \binom{19}{3}$$

$$c) \sum_{i=1}^N \underbrace{(x_i + 1)}_{y_i} = M + N \quad y_i \in \mathbb{N} \setminus \{0\}$$

$$M' = M + N$$

$$N' = N$$

$$\binom{M+N-1}{N-1}$$

P2/

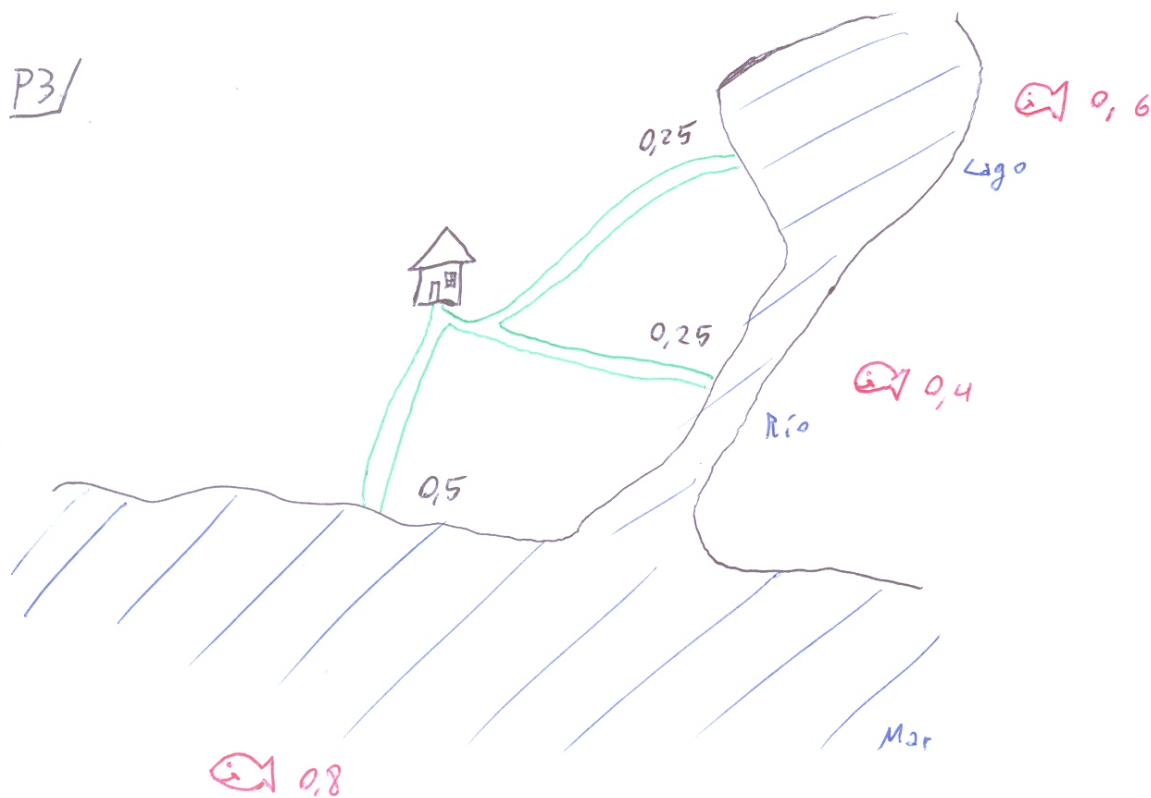
$$a) \{1, 2, 3, 4, 5, 6\}^N$$

$$b) P(k \text{ 4's}) = \binom{N}{k} \left(\frac{1}{6}\right)^k \left(\frac{5}{6}\right)^{N-k} \quad (k \leq N)$$

$$c) \binom{N}{k_1} \binom{N-k_1}{k_2} \binom{N-k_1-k_2}{k_3} \binom{N-k_1-k_2-k_3}{k_4} \binom{N-k_1-k_2-k_3-k_4}{k_5} \binom{N-\sum_{i=1}^5 k_i}{k_6} \left(\frac{1}{6}\right)^{k_1} \left(\frac{1}{6}\right)^{k_2} \left(\frac{1}{6}\right)^{k_3} \left(\frac{1}{6}\right)^{k_4+k_5+k_6}$$

$$= \frac{N!}{k_1! k_2! k_3! k_4! k_5! k_6!} \left(\frac{1}{6}\right)^N$$

P3/



Evento M, R, L P : pescar

¿ $IP(M|P)$?

$$IP(M|P) = \frac{IP(M \cap P)}{IP(P)} = \frac{IP(M \cap P)}{IP(M)} \frac{IP(M)}{IP(P)} = IP(P|M) \frac{IP(M)}{IP(P)}$$

$$= \frac{0,8 \cdot 0,5}{IP(P)}$$

$$IP(P) = IP(P \cap \underbrace{(M \cup R \cup L)}_{\Omega}) = \cancel{IP(P \cap \Omega)} = IP(P \cap M) + IP(P \cap R) + IP(P \cap L)$$

$$= IP(P|M) IP(M) + IP(P|R) IP(R) + IP(P|L) IP(L)$$

$$= 0,8 \cdot 0,5 + 0,4 \cdot 0,25 + 0,6 \cdot 0,25$$

P4/

$$IP(A|B) = \frac{IP(A \cap B)}{IP(B)} = \frac{IP(A \cap (\cup B_i))}{IP(B)}$$

$$= \frac{\sum IP(A \cap B_i)}{IP(B)} = \frac{\sum IP(A|B_i) IP(B_i)}{IP(B)} = P \frac{\sum IP(B_i)}{IP(B)}$$

$$= P \frac{IP(\cup B_i)}{IP(B)} = P$$

P5/

1) $IP(B|A) = 1 \quad IP(B|A^c) = 0$

$$IP(B) = IP(B \cap (A \cup A^c)) = IP(B \cap A) + IP(B \cap A^c)$$

$$= \underbrace{IP(B|A)}_{\frac{1}{3}} IP(A) + \underbrace{IP(B|A^c)}_{\frac{2}{3}} IP(A^c) = \frac{1}{3}$$

2) $IP(B|A) = 0 \quad IP(B|A^c) = 1$

$$IP(B) = \underbrace{IP(B|A)}_{\frac{1}{3}} IP(A) + \underbrace{IP(B|A^c)}_{\frac{2}{3}} IP(A^c) = \frac{2}{3}$$

3) $IP(B|A) = \frac{1}{2} \quad IP(B|A^c) = \frac{1}{2} \quad \text{No importa } A$

$$IP(B) = \frac{1}{2}$$