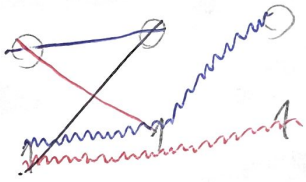
4) $L = H(S)$ si $l_i = \log \frac{1}{P_i}$

$l_i = \log_2 \frac{1}{P_i}$

$2^{l_i} = \frac{1}{P_i}$

$2^{-l_i} = P_i$

s_i	P_i	l_i	codigo
s_1	1/4	2	0 0
s_2	1/4	2	0 1
s_3	1/4	2	1 0
s_4	1/8	3	1 1 0
s_5	1/8	3	1 1 1



$H(S) = \sum_{i=1}^{5} P_i \log \frac{1}{P_i} = \frac{1}{4}\log(4) + \frac{1}{4}\log(4) + \frac{1}{4}\log(4) + \frac{1}{8}\log(8) + \frac{1}{8}\log(8)$

$= 2.250$ bits

$L = \sum_{i=1}^{5} l_i P_i = \frac{1}{4}(2) + \frac{1}{4}(2) + \frac{1}{4}(2) + \frac{1}{8}(3) + \frac{1}{8}(3) = 2.250$ bits

$\sum_{i=1}^{5} P_i = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{8} + \frac{1}{8} = \frac{3}{4} + \frac{1}{4} = \frac{4}{4} = 1$