

Unofficial Errata for *The Mathematics of Coding: Information, Compression, Error Correction, and Finite Fields*

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(Errata collected by Vic Reiner)

Chapter 2

(p. 39) The first display-style equation on the page should read

$$H(p_1, \dots, p_m, q_1, \dots, q_n) = H(p, q) + pH(p_1/p, \dots, p_m/p) + qH(q_1/q, \dots, q_n/q)$$

since the definition of conditional probability is $P(A|B) = P(A \cap B)/P(B)$. For example, if A represents an event that occurs with p_i and B represents the knowledge that the event that occurs has probability given by the p 's and not the q 's, then $P(B) = \sum p_i = p$.

(p. 43) In exercise 2.01, there are one too many occurrences of $\frac{1}{16}$; the probabilities should sum to 1 rather than $\frac{17}{16}$.

Chapter 3

(p. 47) First paragraph: The condition does require that $f : W \rightarrow \Sigma^*$ is injective, but it is not an if and only if statement. The exact requirement is that the map $f^* : W^* \rightarrow \Sigma^*$ which encodes messages is injective.

(p. 60) Exercise 3.04: There are one too many occurrences of $\frac{1}{16}$.

Chapter 4

(p. 62) First paragraph: a stochastic matrix only requires that the *rows* sum to 1. The columns need not. If the columns also sum to 1, the matrix is said to be doubly stochastic.

(p. 65) Third to last line, second summand should be

$$P(X = w_3) \cdot \binom{4}{4} \left(\frac{1}{5}\right)^4$$

(p. 80) Question 4.05: Adding a parity-check bit to 10 should result in 101 (as opposed to 100 as written)