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LE1.2

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LE1.2.1: Entropy

3/3 points (ungraded)

Please compute the entropy associated with each the following random variables. You may find it helpful to use the built-in calculator -- click the icon in the lower righthand corner of the page. It supports the function "log2(...)" which computes the log-base-2 of its argument. You can type in an entire expression to evaluate, e.g., ".3*log2(1/.3) + .7*log2(1/.7)". Answers that include decimal places must be within 10% of the correct solution to be marked correct.

A) The flip of an unfair coin, where $p(\text{heads}) = 0.999$ and $p(\text{tails}) = 0.001$.

Entropy (in bits):

0.011407757737461263

 ✓

B) The random choice of one of the 16 hex digits, where the probability of choosing any particular digit is $1/16$.

Entropy (in bits):

4

 ✓

C) The quiz grade of a randomly-chosen student, where in the 100-student class the grade distribution was 27 A's, 38 B's, 23 C's, 8 D's, and 4 F's.

Entropy (in bits):

2.005404859188913

 ✓

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<div>💬 <u>[typo] missing word</u></div> <div>"each the following", should be "each of the following" #typo</div>	1 ▾
<div>💬 <u>B outcome.</u></div> <div>ha. B got me. listen to my better judgement :)</div>	5 ▾
<div>❓ <u>2 bits are sufficient for question (C)???</u></div> <div>we have five grades, So we require 3 bits to represent 5 grades i.e 000 for A,001 for B,010 for C,011 for D and 100 for F.</div>	2 ▾
<div>✅ <u>Shannon's Information Formula Not Intuitive</u></div> <div>For an unfair coin flip, where $p(\text{heads}) = 0.999$ and $p(\text{tail})=0.001$ and the coin is flipped once, If I was told that the outcome was head the inf...</div>	11 ▾
<div>💬 <u>Computational Power</u></div> <div>Tremendous computational power of the calculator at the bottom of the page. With this computational power we can easily get back to the ...</div>	1 ▾

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