<u>Help</u>

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Tutorial: Quantifying Information

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⊞ Calculator

Quantifying Information

1/1 point (ungraded)

I make up a random 5-bit two's complement number by flipping a fair coin to determine each bit. You're trying to guess the number. If I tell you that the number is positive (> 0), how many bits of information have I given you? Provide the answer in the form log2(X/Y).

Information in my message: $\log_2(32/15)$ bits $\log_2\left(\frac{32}{15}\right)$

Submit

Quantifying Information

1/1 point (ungraded)

X is an unknown 8-bit binary number. You are given another 8-bit binary number, Y, and told that the Hamming distance between X and Y is 7. How many bits of information about X have you been given?

5.00 bits	
\bigcirc log_2 $(8/256)$ bits	
1 bit	
7 bits	
O None of the above	
✓	
Submit	

Quantifying Information and Error Correction

3/3 points (ungraded)

We wish to transmit messages comprised of the four letters shown below with their associated probabilities and 5-bit fixed length encoding.

symbol	$p\left(symbol ight)$	encoding
А	0.125	00000
В	0.125	11100
С	0.5	11011
D	0.25	10111

An unknown letter is received and you are told it's not D. How much information have you received?

 $-l_{000}$ (1 - 0.95) hite

⊞ Calculator

\bigcirc log_2 (0.25) bits	
\bigcirc $log_2 (1-0.25)$ bits	
O None of the above	
✓ When transmitting a message comprised of these four symbols with the probabilities as garange xpected amount of information received when learning of a symbol is	iven above, the
1.75 bits	
1.25 bits	
1.5 bits	
2 bits	
O None of the above	
we transmit messages using the 5-bit fixed-length encoding shown above, will it be nos	sible to perform single-
we transmit messages using the 5-bit fixed-length encoding shown above, will it be pos it error detection and correction at the receiver?	sible to perform single-
it error detection and correction at the receiver:	
yes	
o no	
not enough information to tell	
✓	
✓	
✓	
✓	
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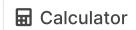












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