Video explanation of solution is provided below the problem.

Quantifying Information

2/2 points (ungraded)

For the problems below enter your responses as a formula in the form log2(X/Y) where X and Y are integers, or as an integer number of bits.

1) Someone picks a name out of a hat known to contain the names of 5 women and 3 men, and tells you a man has been selected. How much information have they given you about the selection?

log2(8/3) ✔ Answer: log2(8/3)

$\log_2\left(\frac{8}{3}\right)$

Explanation

There are 8 names to start with and knowing the selection is a man narrows the choices down to 3 names. Using the formula from lecture with N = 8 and M = 3, we've been given $log_2\left(8/3\right)$ bits of information. Alternatively, the probability of drawing a man's name is pman = 3/8, so the amount of information received is $log_2\left(1/p_{man}\right) = log_2\left(1/\left(3/8\right)\right) = log_2\left(8/3\right)$.

2) You are asked to guess a random 4-bit 2's complement number. I then tell you that the number is >0. How much information have you been given?

log2(16/7) ✔ Answer: log2(16/7)

$\log_2\left(\frac{16}{7}\right)$

Explanation

Before being told anything about the 4-bit random number that you are trying to guess, there are a total of 16 possible such numbers. Once you are told that the number is >0, that reduces the total possibilities to 7. So the amount of information that you have been given is $log_2\left(16/7\right)$.

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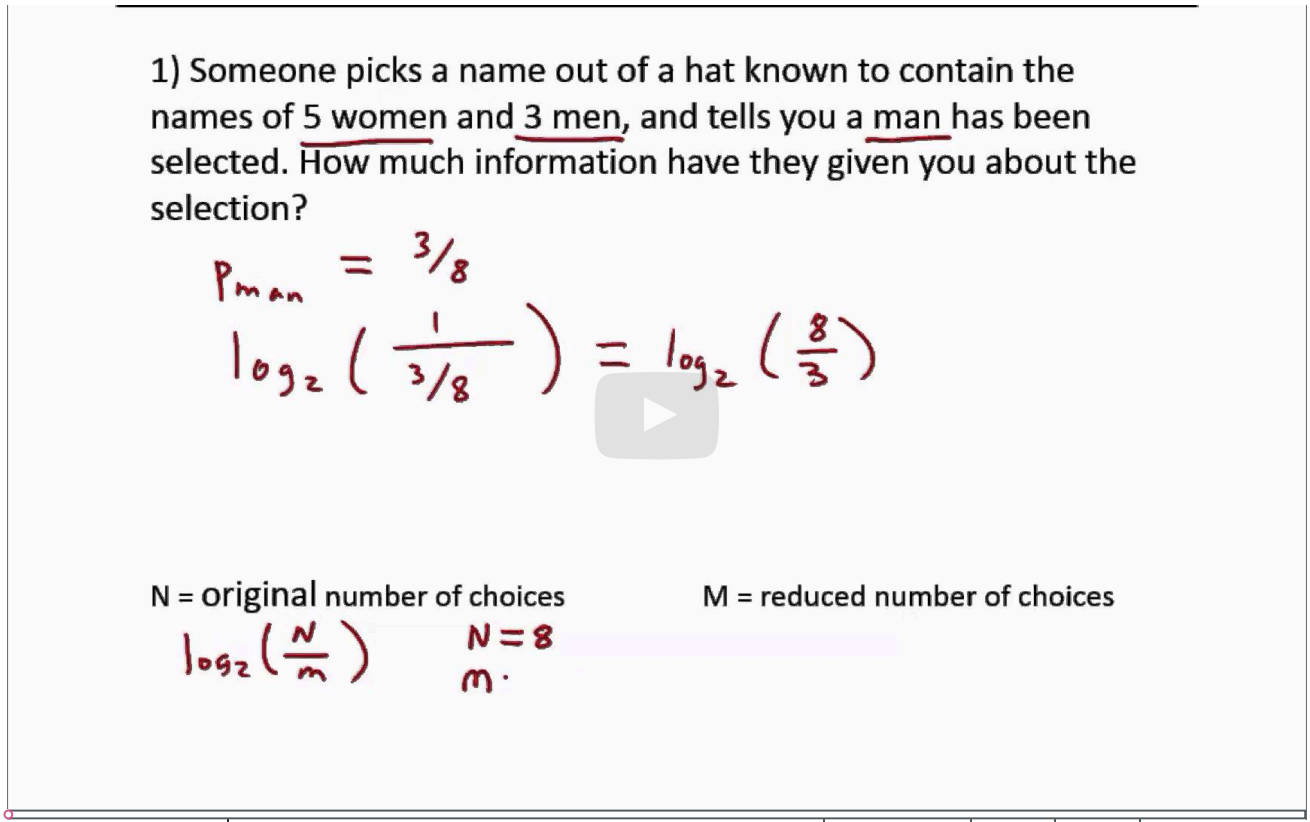
Answers are displayed within the problem

Quantifying Information



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? Wrong answer. 3

Answer of the second question is wrong.

how can m=7?

	how can m =7 ? In the list of binary numbers, there are 15 numbers greater than 0, ie: 0001→1111?	7
	Format for log2 entry What is the proper format to enter the answers to the information quiz? I get the following error: Er...	2
	Why is the amount of data obtained different? Can't the amount of information gathered from two possibilities of one event be the same? For exa...	4
	About prerequisites Hello. I do have some gaps on electronics, but I am starting right now the 6.002x. Do you think it is...	4