Directions: For each item below, give a complete response that represents a good-faith effort to be right. You will receive a "check" if each item has such a response, and an "x" otherwise. An "x" will be given if *any* item is left blank, shows insufficient effort, or has responses such as "I don't know" or "I don't understand". Except for the final item (which is done by filling out a Google Form), do all work on separate pages, and submit a scanned black/white PDF to Blackboard.

---

1. Multiply the binary integers `0111` and `0011`. Show all your steps and don't convert to decimal. However, spoilers: This is 7×3 so the answer should be 21 in binary.
2. Represent the decimal integer -4 in 4-bit binary using 2's complement. Explain your steps.
3. Convert the decimal integer 3 to 4-bit binary and then multiply by the 4-bit binary integer that represents -4 (from the previous exercise). The answer is supposed to be -12, so use that fact to check your answer. Show all steps!
4. Question: If you multiply two 4-bit integers together both of which represent negative integers, is the result always going to be a binary number that represents a positive integer? The answer should be "yes" because multiplying two negative numbers should always yield a positive number; but does it always work out this way when multiplying in binary? Why?
5. Divide the binary integers `0111` and `0011`. This is $7 \div 3$ so you should get a quotient of 2 and a remainder of 1.
6. Question: If you divide any even 4-bit binary integer by 2 (= `0010`), do you get a remainder of 0? (You should! Question: How do you tell if a binary integer is even?)
7. Fill out the response form at https://bit.ly/2PuFN5A.