

Directions:

- Do only the Checkpoint problems that you need to take and feel ready to take. If you have already earned Mastery on a Learning Target, do not attempt a problem for that Target! You can skip a Target if you need more time to practice with it, and take it on the next round.
 - Do not put any work on this form; do all your work on separate pages. You may either handwrite or type up your work.
 - Clearly indicate which Learning Target you are attempting at the beginning of its solution; please also turn in solutions for learning targets in order (for example, do not turn in work for A.2 after work for SF.1). The easiest way to do this is to put each Learning Target on its own solution page and do not put more than one Learning Target on a single page.
 - If you are handwriting, submit your work by **scanning your work** using a scanning app or scanning device; **do not just take a picture** but scan your work to a clear, legible, black and white PDF file of size less than 100 MB. Work submitted as an image file (JPG, PNG, etc.) will not be graded.
 - Submit your work by uploading it as a PDF or Word file to the appropriate assignment area on Blackboard.
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Learning Target A.1: *I can represent an integer in base 2, 8, 10, and 16.*

Perform all of the following conversions. Show all work and explain all reasoning.

1. 813 in decimal; convert to binary and octal.
 2. F33 in hexadecimal; convert to decimal and octal.
 3. 546 in octal; convert to binary and decimal.
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Learning Target A.2 (Core): *I can add, subtract, multiply, and divide two integers written in binary.*

Perform all of the following computations in binary, without changing to base 10. Show all work and explain all reasoning.

1. $10001101 + 01111110$
 2. $10001101 - 01111110$
 3. 10011×101
 4. $10001101 \div 100$
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Learning Target A.3: *I can compute $a \% b$ given integers a and b and perform arithmetic mod n .*

Show all work and explain all reasoning:

1. Compute the following: $19801 \% 124$, $1932112 \% 100$, and $191121801 \% 2$.
 2. Compute $(7^{99}) \% 11$.
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Learning Target L.1: *I can use propositional variables and logical connectives to represent statements; and interpret symbolic logical statements in plain language.*

Let A be the statement *It's raining*, B the statement *It's too hot*, and C the statement *I will mow the yard*.

1. Interpret the expression $(\neg A) \vee C$ in plain language.
2. Interpret the expression $A \rightarrow \neg B$ in plain language.
3. Write the statement “If it’s not raining and not too hot, then I’ll mow the yard” in terms of the variables A , B , and C .
4. Write the statement “If I don’t mow the yard, then it’s either raining or too hot” in terms of the variables A , B , and C .