(40 pts) Approx. 3 days

The second part of this unit is all about working fluently with logic expressions. You'll start by looking at how to take those logic expressions and create good AOI circuits from them. After that, we'll continue the process by simulating those circuits in Multisim and eventually creating them on a breadboard. Here you'll get to investigate the difference between Sum-Of-Product and Product-Of-Sum expressions and learn why we like Sum-Of-Product the most. Finally, we'll wrap up this part of the unit with a close look at Boolean Algebra and how some mathematical rules can help us simplify our logic expressions and make our work significantly easier!

1. Start by watching the *AOI Implementation* presentation and taking some good notes. Make sure your page of notes emphasizes when each of the three gates (AND/OR/INVERTER) are used and how they work logically.
2. Then, complete the *AOI Implementation Activity*
3. Use Multisim to create the AOI circuits from the activity. Make sure you understand the organization of an IC chip (the 74LS## chips) and how many gates are present on each one. This will help you make good decisions about how many chips to use. (*hint: we want to use as few as possible!*)
4. Once your Multisim circuit simulations work, breadboard your SOP circuit and confirm again that it works as intended. (Do Not breadboard the second POS circuit).
5. Next, watch the *Simplifying Expressions* presentation and the *Simplification Overview* video. Take a full page of good notes, and be sure to include the "Expression Simplifying Rules" of Boolean algebra. You can print the reference sheet from the website and include it in your notes if you want!
6. Next, complete the *Simplifying Expressions Assignment*. This will be a tough one, but the key is to show all your steps. That way the more problems you do, the more references you'll have for future work. Also, the more work you show the better Benshoof will be able to help you find mistakes.
7. Finally, take the Unit 2 Quiz on Digital Logic linked on our website. Take the quiz on or before **September 20!**

Part 2: Tasks	*5 points*	*4-3 points*	*2-1-0 points*
Notes on AOI Implementation	+ You took a full page of notes on AOI circuit creation. + Your notes include details about And, Or, and Inverter gates specifically	- Your notes are less than a full page	- Very brief or no notes
AOI Implementation Assignment	+ You drew all four AOI circuits in your engineering notebook.	- You only drew three of the circuits in your engineering notebook	- You drew fewer than three circuits in your notebook.
Multisim & Breadboard	+ You completed the Multisim circuit for both the SOP and POS circuits. + You completed the breadboarding for the SOP circuit	- You did not complete both Multisim circuits - You did not complete the breadboarding	- You did not complete the breadboarding or Multisim circuits
Notes on Simplifying Expressions	+ You took a full page of notes on simplifying logic expressions + Your notes include the Boolean algebra rules	- Your notes are less than a full page	- Very brief or no notes
	10-8 points	*7-4 points*	*3-0 points*
Simplifying Expressions Assign.	+ You completed the entire *Simplifying Expressions Assignment* + You corrected your work with the answer key and made corrections	- You did not finish the assignment - You did not correct your assignment	- You did not do the assignment at all - Your assignment is missing
Take Unit 2 Quiz: Digital Logic	+ You took the Unit 2 Quiz on the website by the Quiz Due Date + Grade is based on number correct	N/A	(0 pts) You did not take the Unit 2 Quiz