

## Homework 1

*Due Friday, October 3*

Some of these problems are from *Operations Research, Fourth Edition* by Wayne Winston. See the syllabus for a link to the pdf.

Some of these problems will require to use a computer to solve the LP. You **do not** need to submit the code you used to do this. Instead, you should write something like “For this LP, GLOP returned an optimal solution of ...”.

Two of the problems will be selected to be graded. You will not be told which two in advance.

1. Winston, Problem 5, page 63. Solve the LP by hand.
2. Winston, Problem 13, page 115. Solve the LP using OR-Tools.
3. Winston, Problem 14, page 115. Solve the LP using OR-Tools.
4. Winston, Problem 46, page 120. Please have the computer solve over the **real numbers**, not the integers. You will not get credit if you use an integer program solver. After you solve the LP, you may need to do some additional work to make a realistic recommendation. You do not have to prove that your recommendation is the best possible.
5. Recall the corn/wheat farm example we did in lecture. To increase profit, the farmer is considering buying a little more land, hiring a little more labor, or both. Make a recommendation on what the farmer should do. Your recommendation should take into account that buying land and labor costs money.