Class Activities

# Module A: Linear Programming

**Activity 1: Individual Exercise**

Learning objective: Identify the critical features of linear programming and explain why it is critical for business operations success

Provide a problem similar to Example A.1. Have each student follow the three-step process to formulate the problem as a linear programming model[[1]](#footnote-1). Each student keeps a record of their process of solving the problem provided, including actual steps, time taken for each step, and a description of each step. Turn in the process analysis at the end of class. Look over the analyses for areas where students spend the most time, need clarifications, etc.. Report back to the class the findings of the analyses and go over areas that need clarifications in the next meeting.

**Activity 2: Activity for Small Groups**

Learning objective: Solve LP problems with both maximization and minimization objectives, using graphical methods, and Excel solver

Go over the linear programming model of activity 1. Draw two axes on the board to represent one decision variable on the vertical axis and the other on the horizontal axis. Have students find two or three classmates to form a group. Assign each group one of the constraints of the model. Discuss among one another in the group how to plot the constraint assigned and identify the feasible region. Have each group come up to the board to graph the constraint and feasible region. Come together as a class to identify the feasible solution space. Demonstrate the rest of the graphical solution method to find the optimal solution to the problem.

**Activity 3: Activity for Small Groups**

Learning objective: Perform Sensitivity Analysis on solutions to LP problems.

Provide students with an excel sensitivity analysis report generated by Excel Solver for a LP problem (similar to Screenshot A.6). Have students find two or three classmates to form a group. Assign each group one of the variable cells or constraints row. Discuss among one another in the group the meaning of each column heading of the row assigned. Present the discussion to the whole class.

1. Angelo T.A., and Cross, K.P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers, 2nd Edition, Jossey-Bass Publisher, San Francisco, CA. [↑](#footnote-ref-1)