

## Homework #5

This is an individual assignment. All work you submit must be your own. Submit all of your work for this assignment in a single Excel workbook placing your model for each problem on a separate sheet (tab).

1. Charles Sachs & Associates (CSA) is a financial services firm that manages investment portfolios for its customers. A new client has hired CSA to manage its investment portfolio which totals \$800,000. The client has asked CSA to invest this portfolio in some combination of the stocks listed in the table below.

Stock	Price per Share	Annual Return per Share	Investment Limit
Standard Oil	\$50	\$6	\$200,000
B&O Railroad	\$30	\$4	\$450,000
Dunder Mifflin	\$40	\$5	\$250,000

- a. Develop an optimization model to recommend the best investment strategy for this new client.
  - b. Which constraints are binding and what is their marginal value?
2. Sterling Cooper, an advertising firm, has been hired by Skynet Films to promote the next *Terminator* movie. The firm has been given a \$100,000 budget to spend on advertising the week prior to the movie's release. The client has dictated Sterling Cooper will use television ads and internet ads to promote the movie. Each television ad spot costs \$500 and reaches 7,000 people. Each internet ad spot costs \$250 and reaches 4,000 people. Skynet wants to purchase at least 20 television ads and at least 50 internet ads.
  - a. Develop an optimization model to recommend the best advertising strategy for this problem which respects the client's constraints.
  - b. Which constraints are binding and what is their marginal value?