

## Group Work, Sect 3.1

The Wyndor Glass Company produces high quality glass products. It has three plants. Aluminum frames and hardware are made in Plant 1, wood frames are made in Plant 2, and Plant 3 produces the glass and assembles the products.

Management has decided to revamp the company's product line, discontinuing old merchandise to launch two new products:

Product 1: An 8-foot glass door with aluminum framing.

Product 2: A  $4 \times 6$  foot double hung wood framed window.

Product 1 requires some of the production capacity in Plants 1 and 3, but none from Plant 2. Product 2 needs only Plants 2 and 3. The marketing division has concluded that the company could sell as much of either product as could be produced by these plants. However, because both products would be competing for the same capacity in Plant 3, it is not clear which mix of the two products would be most profitable. An OR team had been formed to study this question- Assume that each product is produced in batches of 20.

Here is the data they gathered:

Plant	Hours for Prod 1 Per Batch	Hours for Prod 2 Per Batch	Hours Available/Week
1	1	0	4
2	0	2	12
3	3	2	18
Profit per batch	\$3,000	\$5,000	

- What are your decision variables?
- Are we optimizing something?
- Any constraints?

## Another Example (Dorian Auto)

A car manufacturer makes luxury cars and trucks. The company believes that its most likely customers are high income women and men. To reach these groups, Dorian Auto has embarked on an ambitious TV advertising campaign, and can purchase 1-minute spots on either comedy shows or football games.

Each comedy commercial is seen by 7 million high income women and 2 million high income men. Each football commercial is seen by 2 million high income women and 12 million high income men. The ads for the comedy shows costs \$50 thousand dollars, and for a football game, it is \$100 thousand (those are for 1 minute spots).

Dorian would like the commercials to be seen by at least 28 million high income women and 24 high income men. How should Dorian buy its advertising to meet these goals at a minimum cost?