## Decision:

How much should we buy from each supplier?

## Objective:

1. Minimize the cost of supply of coking coal in total received from suppliers.
2. Total cost of supply
3. Average cost of supply.

## Constraints:

1. Average volatility of 19%
2. 50% of total from union mines (Ashley, Bedford, Dunby, Florence).
3. Rail total is 650 mtons per year maximum.
4. Truck total is 720 mtons per year maximum.
5. Limitations from each supplier are as follows: A : 300, B: 600, C: 510, D: 655, E: 575, F: 680, G: 450, H: 490

# Equations:

## Decision:

A+B+C+D+E+F+G+H = 1225 (each of the letters represents the quantities from each company starting with that letter). How much is each supplier going to supply?

## Objective:

1. 49.50A+50B+61C+63.50D+66.50E+71F+72G+80H = Minimum total cost.
2. Total cost = Minimum total cost above.
3. Average cost = (49.50A+50B+61C+63.50D+66.50E+71F+72G+80H)/8. \*\*Assumes purchasing from all 8 suppliers, or else divide by number of successful suppliers.

## Constraints:

1. (15A + 16B + 18C + 20D + 21E+22F+23G+25H)/1225 >=19
2. A + B +D + F >= 612.5
3. A + C + G + H<=650
4. B + D + E + F <=720

## Solution



The minimum total cost is : 73267.5, with an average cost per supplier of : 14653.5

The supply should be 55 Mtons from Ashley, 600 Mtons from Bedford, 20 Mtons from Dunby, 100 Mtons from Earlam, and 450 Mtons from Gaston.