

Week 2: Computational Modeling and Analysis Tools

MA6600 Quantitative Methods for Management Decisions

Arithmetic				
Add	2	3	5	=B5+C5
Subtract	6	2	4	=B6-C6
Multiply	3	4	12	=B7*C7
Divide	20	5	4	=B8/C8
Exponent	5	2	25	=B9^C9
Basic Order	3	7	52	=B10+C10*C10
Modified Order	3	7	70	=(B10+C10)*(C10)
Sum			172	=SUM(D5:D10)
Subtotal			172	=SUBTOTAL(9,D5:D10)
Average			24.57	=AVERAGE(D5:D10)

Minimum and Maximum Functions				
	Price	Units	Revenue	
Item 1	\$ 1.25	156	\$ 195.00	
Item 2	\$ 3.50	923	\$ 3,230.50	
Item 3	\$ 0.75	745	\$ 558.75	
Item 4	\$ 0.90	521	\$ 468.90	
Item 5	\$ 5.25	178	\$ 934.50	
Total			\$ 5,387.65	=SUM(D19:D23)
Minimum			\$ 195.00	=MIN(D19:D23)
Maximum			\$ 3,230.50	=MAX(D19:D23)

Logical Functions		
Question: Did we sell more of Item 1 than we sold of Item 2?		
Answer:	No	=IF(C19>C20,"Yes","No")
Question: Did either Item 1 or Item 2 provide more revenue than Item 3?		
Answer:	Yes	=IF(D19>D2,"Yes",IF(D20>D21,"Yes","No"))

Conditional Formatting					
Goal: We want to draw attention to any item that is losing money.					
	Price	Units	Revenue	Cost	Net
Item 1	\$ 1.25	156	\$ 195.00	\$ 200.00	\$ (5.00)
Item 2	\$ 3.50	923	\$ 3,230.50	\$ 1,500.00	\$ 1,730.50
Item 3	\$ 0.75	745	\$ 558.75	\$ 500.00	\$ 58.75
Item 4	\$ 0.90	521	\$ 468.90	\$ 500.00	\$ (31.10)
Item 5	\$ 5.25	178	\$ 934.50	\$ 1,000.00	\$ (65.50)
Total			\$ 5,387.65	\$ 3,700.00	\$ 1,687.65

Goal Seek

Goal: We want to minimize time for producing 100,000 units.

	Daily Production	Units Produced	
Machine #1	2500	22935.8	=B51*B55
Machine #2	3600	33027.5	=B52*B55
Machine #3	4800	44036.7	=B53*B55
Days	9.17		
Units Produced	100,000		=SUM(C51:C53)

Solver (Solver Add-in)

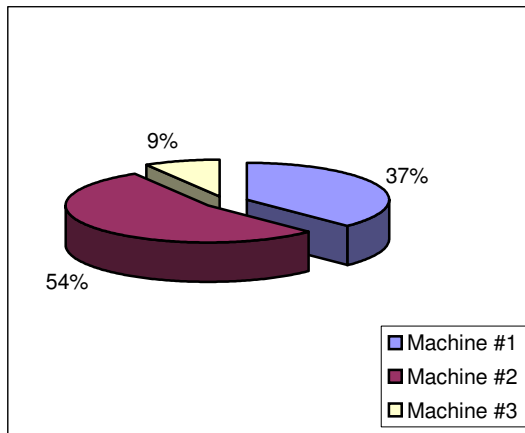
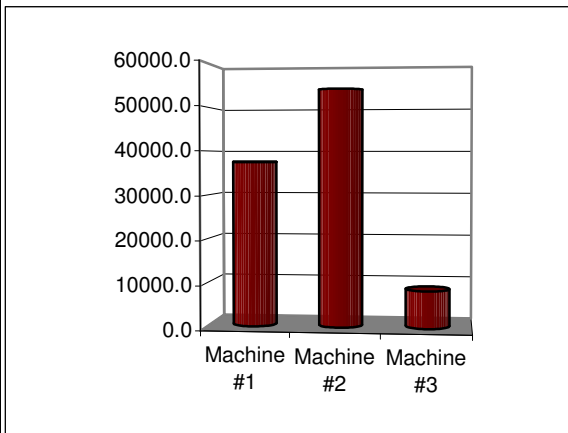
Goal: We want to produce 100,000 units for the lowest cost in 15 days or less.

	Daily Production	Days	Cost per Unit	Units Produced	Cost
Machine #1	2500	15.00	\$ 0.30	37500.0	\$ 11,250.00
Machine #2	3600	15.00	\$ 0.45	54000.0	\$ 24,300.00
Machine #3	4800	1.77	\$ 0.50	8500.0	\$ 4,250.00
Total Cost	\$ 39,800.00				=SUM(F62:F64)
Units Produced	100,000				=SUM(E62:E64)

Charts and Graphs

Bar Graph: Shows Relative Amounts

Pie Chart: Shows Percentage of Whole



Line Graph: Shows Patterns (Very Useful for Linear Programming)

X	Y
0	6
1	8
2	10
3	12
4	14
5	16

