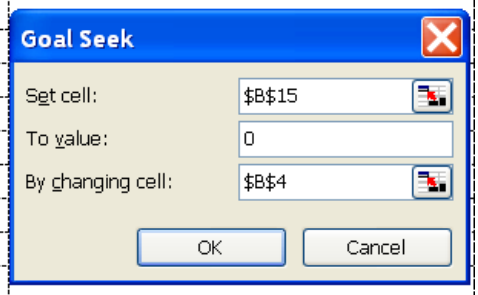
PQ Problem 1

Suppose you are a manager in P Manufacturing that makes Product P (Barnacle) only. The demands for Product P are 100 units per week at $90 per unit. The overhead (fixed) cost is $6,000.

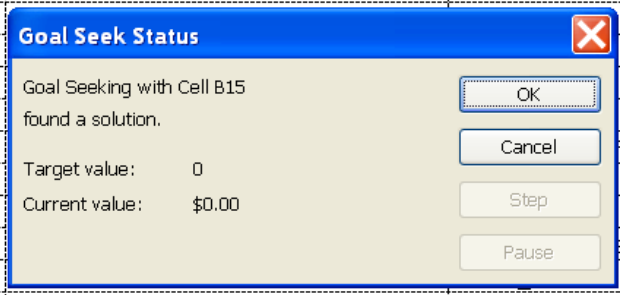
There are two raw materials: Steel Widget and Metal Bracket for products P. The unit costs for raw materials are $25.00 and $20.00 for Steel Widget, and Metal Bracket, respectively.

You are going to decide how many Ps to make in order to break-even (the net profit is zero) for the company.

	A	B	C	D
1	Break-even Analysis Problem			
2	for PQ Problem			
3				Tools/Goal Seek with 0 as to Value
4	Number of Product P to make	100		***Changing Cell***
5				
6	Fixed Cost	$3,000.00		
7	Variable Cost per Unit of P	$45.00		
8				
9	Total Cost	$7,500.00		
10				
11	Selling Price per Unit of P	$90.00		
12				
13	Total Revenue	$9,000.00		
14				
15	Net Profit	$1,500.00		***Set Cell***

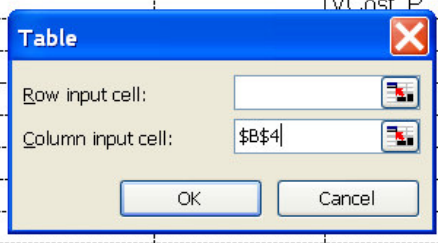


	A	B	C	D	E
1	Break-even Analysis Problem				
2	for PQ Problem				Insert/Names/D
3				Tools/Goal Seek with 0 as to Value	Insert/Names/P
4	Number of Product P to make	66.66667		***Changing Cell***	Contribution_P
5					
6	Fixed Cost	$3,000.00			
7	Variable Cost per Unit of P	$45.00			
8					
9	Total Cost	$6,000.00			
10					
11	Selling Price per Unit of P	$90.00			
12					
13	Total Revenue	$6,000.00			
14					
15	Net Profit	$0.00		***Set Cell***	



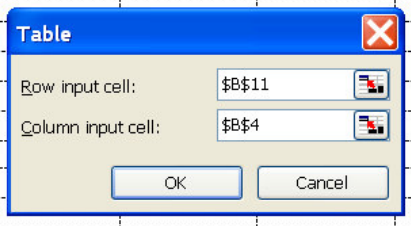
Use of Data/Table to do What-if Analysis:

	A	B	C	D	E
1	Break-even Analysis Problem				
2	for PQ Problem				Insert/Nam
3				Tools/Goal Seek	Insert/Nam
4	Number of Product P to make	100		***Changing Cell***	Contributi
5					Fixed_Cos
6	Fixed Cost	$3,000.00			N_Profit_F
7	Variable Cost per Unit of P	$45.00			Print_Area
8					Revenue_I
9	Total Cost	$7,500.00			Selling_Pr
10					Total_Cost
11	Selling Price per Unit of P	$90.00			Unit_Contr
12					Unit_P_to_
13	Total Revenue	$9,000.00			VCost_P
14					
15	Net Profit	$1,500.00			
16					
17	Contribution per Unit P	$45.00			
18					
19	Total Contribution P	$4,500.00			
20					
21					
22	Use of Data Tables for What-if Analysis				
23					
24					
25	Data Table	Data/Table			
26	No. of P to make	Total Cost	Total Revenue	Net Profit	
27		7500	9000	1500	
28	50	5250	4500	-750	
29	60	5700	5400	-300	
30	70	6150	6300	150	
31	80	6600	7200	600	
32	90	7050	8100	1050	
33	100	7500	9000	1500	
34	110	7950	9900	1950	



Use Data/Tables to do What-if Analysis when Selling Price for Product P changes:

	A	B	C	D	E	F
1	Break-even Analysis Problem					
2	for PQ Problem				Insert/Names/Define	
3				Tools/Goal Se	Insert/Names/Paste/Paste Li	
4	Number of Product P to make	100		***Changing Ce***	Contribution_	=BE!$B$19
5					Fixed_Cost	=BE!$B$6
6	Fixed Cost	$3,000.00			N_Profit_P	=BE!$B$15
7	Variable Cost per Unit of P	$45.00			Print_Area	=BE!$A$1:D
8					Revenue_P	=BE!$B$13
9	Total Cost	$7,500.00			Selling_Price	=BE!$B$11
10					Total_Cost	=BE!$B$9
11	Selling Price per Unit of P	$90.00			Unit_Contri_P	=BE!$B$17
12					Unit_P_to_Ma	=BE!$B$4
13	Total Revenue	$9,000.00			VCost_P	=BE!$B$7
14						
15	Net Profit	$1,500.00		***Set Cell***		
16						
17	Contribution per Unit P	$45.00				
18						
19	Total Contribution P	$4,500.00				
20						
21						
22	Use of Data Tables for What-if Analysis					
23						
24						
25	Data Table	Data/Table				
26	No. of P to make	Selling Price of P				
27	$1,500.00	$70.00	$80.00	$90.00	$100.00	$110.00
28	50	-1750	-1250	-750	-250	250
29	60	-1500	-900	-300	300	900
30	70	-1250	-550	150	850	1550
31	80	-1000	-200	600	1400	2200
32	90	-750	150	1050	1950	2850
33	100	-500	500	1500	2500	3500
34	110	-250	850	1950	3050	4150



Suppose you are a manager in PQ Manufacturing that makes Products P (Barnacle) and Q (Mariner) only. The demands for Products P and Q are 100 units per week for P at $90 per unit and 50 units per week for Q at $100 per unit. The overhead (fixed) cost is $6,000.

The production process to make products P and Q is given in the diagram bellow. The process starts from the bottom portion of the diagram.

There are three raw materials: Steel Widget, Metal Bracket and Pine Gizmo for products P and Q. The unit costs for raw materials are $25.00, $20.00 and $20.00 for Steel Widget, Metal Bracket and Pine Gizmo, respectively.

Four major work centers for the production are Drilling, Painting, Welding and Assembling centers. Each work center has one operator who works 40 hours or 2400 minutes per week. As shown in the diagram, a product P is made from Steel Widget and Metal Bracket, and a product Q is made from Pine Gizmo and Metal Bracket. To make a P, Raw material Steel Widget is processed at Drilling for 15 minutes, processed at Welding for 10 minutes and then waits to be assembled. To make a Q, Raw material Pine Gizmo is processed at Drilling for 10 minutes, processed at Painting for 15 minutes and then waits to be assembled. Raw material Metal Bracket is processed at Painting for 15 minutes, processed at Welding for 5 minutes, then spends 10 minutes to be assembled into a P with a part made from Steel Widget or spends 5 minutes to be assembled into a Q with a part made from Pine Gizmo. You are going to decide how many Ps and Qs to make in order to maximize the profit for the company.