

Operations Management 101
A Guide to Microsoft Excel using select problems.

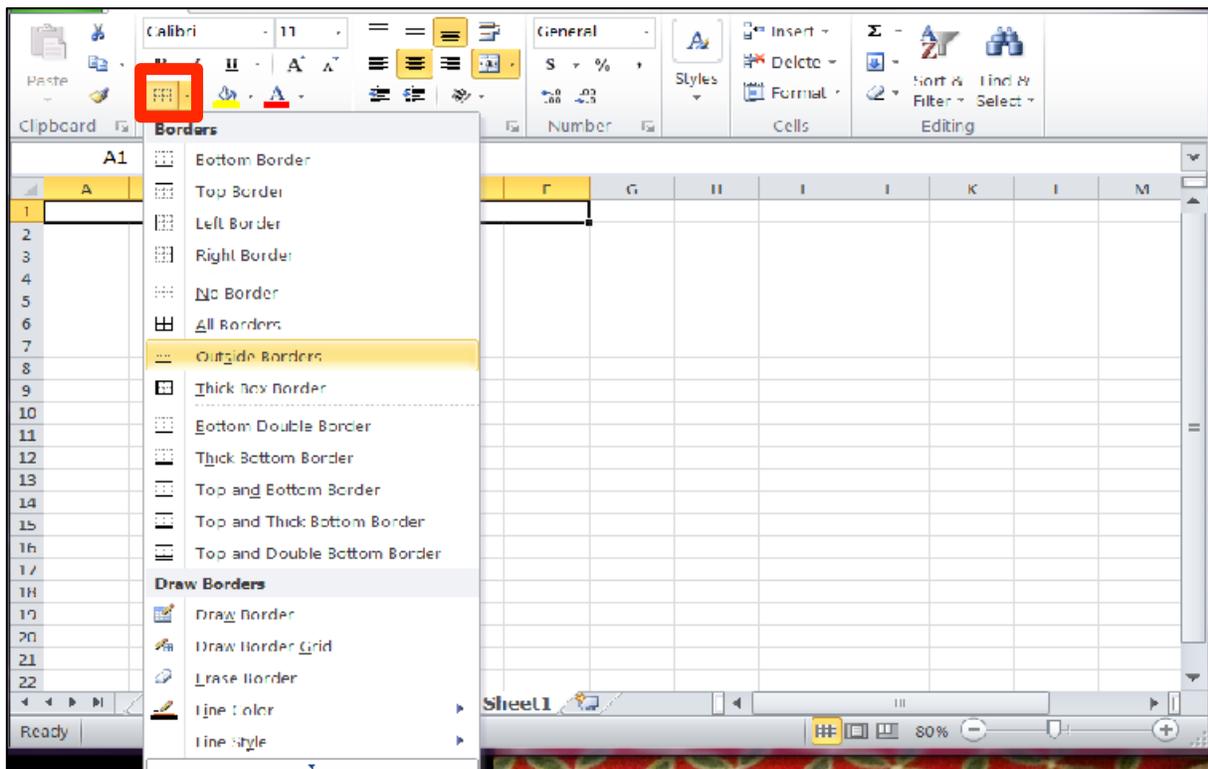
Below are instructions for Problem 4 in Chapter 5.

Step 1: Insert a Data table.

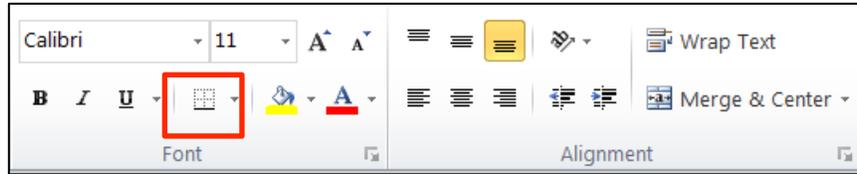
- a) In cell A1, type “Data” and press Enter.
- b) With your mouse, highlight Cells A1 to E1.
- c) Press the Merge and center button in the top toolbar (pictured below).



- d) Click cell A1 and create outline using icon shown below:



- e) In cell B3 type “Yearly Demand.”
- f) Merge into cell E3 using step described in part c.
- g) Click cell B3 and create an underline by clicking the icon shown below:



h) Create the table shown below:

	A	B	C	D	E
1	Data				
2					
3	Yearly Demand				
4		1 (in 000s)	2 (in 000s)	3 (in 000s)	4 (in 000s)
5	Plastic 90	32	44	55	56
6	Plastic 180	15	16	17	18
7	Plastic 360	50	55	64	67
8	Bronze 90	7	8	9	10
9	Bronze 180	3	4	5	6
10	Bronze 360	11	12	15	18

i) To increase the column width of column A, double-click the area shown below:

	A	B	C	D	E
1	Data				
2					
3	Yearly Demand				
4		1 (in 000s)	2 (in 000s)	3 (in 000s)	4 (in 000s)
5	Plastic 90	32	44	55	56
6	Plastic 180	15	16	17	18
7	Plastic 360	50	55	64	67
8	Bronze 90	7	8	9	10
9	Bronze 180	3	4	5	6
10	Bronze 360	11	12	15	18

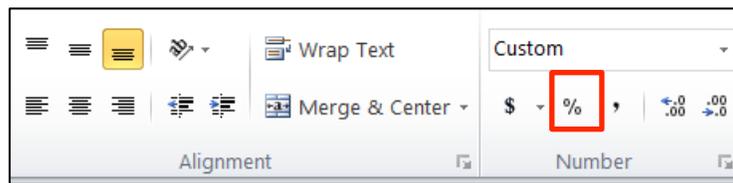
Step 2: Answer Questions Relating to Plastic

- In cell A12, enter “Plastic” and format the same way as described in **Step 1** parts a-d.
- Starting in cell B13, enter data shown below:

12	Plastic			
13	Operators needed	4		
14	Operating Capacity:	200		
15	Machines available:	1		
16				

- In cell A18, type “Demand for plastic sprinklers.”
 - To move down a line within a single cell, hold Alt and press Enter.
- In cell B18, type “=SUM(B5:B7)”; press enter.

- i. Note that instead of typing cell locations, you can simply click the cell you are referencing.
- e. Copy and paste the formula from B18 into cells C18-E18:
 - i. Click cell B18
 - ii. Hover mouse over the bottom right hand corner of the cell until a bold cross appears.
 - iii. Click and drag across to cell E18 and notice how the formula copies.
- f. In cell B19, type “=B18/(\$D\$14*\$D\$15)”; press enter
 - i. The dollar sign (\$) makes use of what is known as an Absolute Reference. This is necessary in order to copy the formula into cells C19-E19 because the formula needs to reference those exact cells every time.
- g. To format as a percentage, highlight cells B19-E19 and click icon shown below:



- h. In cell B20, type “=B18/\$D\$14”; press enter.
 - i. See part f. i. regarding the use of the \$.
 - i. Copy to cells C20-E20 using the technique described in **Step 2** part e.
 - j. In cell B21, type “=B20*\$D\$13”; press enter.
 - i. See part f. i. regarding the use of the \$.
 - k. Copy to cells C21-E21 using the technique described in **Step 2** part e.

1. Below is a screenshot of what your answers should look like:

	A	B	C	D	E
10	Bronze 360	11	12	15	18
11					
12	Plastic				
13		Operators needed		4	
14		Operating Capacity:		200	
15		Machines available:		1	
16					
17		Year 1	Year 2	Year 3	Year 4
18	Demand for plastic sprinklers	=SUM(B5:B7)	=SUM(C5:C7)	=SUM(D5:D7)	=SUM(E5:E7)
19	% of capacity used	=B18/(\$D\$14*\$D\$15)	=C18/(\$D\$14*\$D\$15)	=D18/(\$D\$14*\$D\$15)	=E18/(\$D\$14*\$D\$15)
20	Machine requirements	=B18/\$D\$14	=C18/\$D\$14	=D18/\$D\$14	=E18/\$D\$14
21	Labor requirements	=B20*\$D\$13	=C20*\$D\$13	=D20*\$D\$13	=E20*\$D\$13

	A	B	C	D	E
12	Plastic				
13		Operators needed		4	
14		Operating Capacity:		200	
15		Machines available:		1	
16					
17		Year 1	Year 2	Year 3	Year 4
18	Demand for plastic sprinklers	97	115	136	141
19	% of capacity used	48.50%	57.50%	68.00%	70.50%
20	Machine requirements	0.485	0.575	0.680	0.705
21	Labor requirements	1.94	2.30	2.72	2.82

Step 3: Answer Questions Relating to Bronze

- a. Follow the steps described in **Step 2**.
- b. Below is a screenshot of what your answer:

	A	B	C	D	E
22					
23	Bronze				
24		Operators needed		2	
25		Operating capacity:		12	
26		Machines available		3	
27					
28		Year 1	Year 2	Year 3	Year 4
29	Demand for plastic sprinklers	=SUM(B8:B10)	=SUM(C8:C10)	=SUM(D8:D10)	=SUM(E8:E10)
30	% of capacity used	=B29/(\$D\$25*\$D\$26)	=C29/(\$D\$25*\$D\$26)	=D29/(\$D\$25*\$D\$26)	=E29/(\$D\$25*\$D\$26)
31	Machine requirements	=B29/\$D\$25	=C29/\$D\$25	=D29/\$D\$25	=E29/\$D\$25
32	Labor requirements	=B31*\$D\$24	=C31*\$D\$24	=D31*\$D\$24	=E31*\$D\$24

	A	B	C	D	E
22					
23	Bronze				
24		Operators needed		2	
25		Operating capacity:		12	
26		Machines available		3	
27					
28		Year 1	Year 2	Year 3	Year 4
29	Demand for plastic sprinklers	21	24	29	34
30	% of capacity used	58.3%	66.7%	80.6%	94.4%
31	Machine requirements	1.75	2.00	2.42	2.83
32	Labor requirements	3.50	4.00	4.83	5.67