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

Below are instructions for #15 in Chapter 18

Step 1: Insert a Data table.

- a) In cell A1, type "Data" and press Enter.
- b) With your mouse, highlight Cells A1 to F1.
- c) Press the Merge and center button in the top toolbar (pictured below).



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

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- e) In cell B3, type "Month." Press enter.
- f) To underline, click cell B3 and click icon shown below:



- g) In cell B4, type "January"; press enter
- h) Click cell B4 and hover mouse over the bottom right-hand corner until a bold cross appears.
- i) Click and drag down to cell B9
- j) In cell C3, type "Demand"
- k) Create the table with the data shown below:

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7			April			1	12	
8			May			1	16	
9			June			1	15	
10								

Step 2: Solve for the July forecast using 3 month moving average

- a) In cell A13, write down the formula for a moving average
 i. In cell A13, type "F7 = (A4+A5+A6)/3"
- b) In cell A15, type "F7 ="
- c) In cell B15, type "=AVERAGE(C7:C9)"; press enter.

Step 3: Solve for the July forecast using single exponential smoothing

- a) In cell A17, write down the formula for single exponential smoothing
 - i) In cell A17, type "F7 = F6 + α (A6 F6)"
 - (1) To insert the alpha sign (α), go to the Insert Tab and click the Symbol button shown below:

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(2) To find the proper character, go to the character code button and type "03B1" (shown below):

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- (3) Press Insert
- (4) Press Close
- a) In cell A19, type "F6="
- b) In cell C19, type "13";
- c) In cell A20, insert the alpha symbol using the steps described above
- d) In cell C20, type "0.2"
 - i) You will need these for formulas later on
- e) In cell A22, type "F7 ="
- f) In cell B22, type "=C19+(C20*(C9-C19))"; press enter

Step 4A: Solve using linear regressions—Manual Method

- a. In cell A24, write down the formula for Linear regressioni. In cell A24, type "Linear Regression: a = y bx"
- b. In cell B26, type "x"
- c. In cell C26, type y
- d. In cell D26, type xy

- e. In cell E26, type x2
- f. In cell B27 type "1" and in cell B28 type '2"; press enter.
- g. Click cells B27-B28 and hover mouse over the bottom right-hand corner until a bold cross appears.
- h. Click and drag to cell B32.
- i. Click auto-fill icon and select "Fill Series" (shown below).



- i) Copy formula into cells C28-C32
 - (1) To do this, click on cell C27 and hover mouse over the bottom right-hand corner until a bold cross appears.
 - (2) Click and drag down to cell C32
- f) In cell D27, type "=B27*C27"; press enter.
 - i) Copy formula into cells D28-D32 using steps described above.
- g) In cell E27, type "=B27^2"
 - i) Copy formula into cells E28-E32 using steps described above.
- h) In cell A33, type "Total"
- i) In cell D33, type "=SUM(D27:D32)"
 - i) Copy formula into cell E33 using steps described above.
- j) In cell A34, type "Average"
- k) In cell B34, type "=AVERAGE(B27:B32)"
 - i) Copy formula into cell C34 using steps described above.

- l) In cell A36, type "b="
- m) In cell B36, type "=(D33-6*B34*C34)/(E33-6*B34^2)"; press enter.
- n) In cell A38, type "a ="
- o) In cell B38, type "=C34-B36*B34"; press enter.
- p) In cell A40 type "Y(x=7)="
- q) In cell B40, type "=B38+B36*7"; press enter.

Step 4B: Solve using linear regressions—"Regression" function

a) Starting in cell A57, re-create the table shown below:

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62	3	15					
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64	5	16					
65	6	15					
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- b) Install Data analysis add-in (The instruction here is for EXCEL 2010):
 - i. Click on File (In case you are using a different version of EXCEL, you may have to click the home button in the top left and the Options is in the bottom right corner of that drop down.):



ii. Click on Options (shown below):



iii. Click on Add-Ins (shown below):

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General Formulas	General options for working with Excel.
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Save Language Advanced Customize Ribbon Quick Access Toolbar	Image: Show Mini Toolbar on selection Image: Selection Image
Add-Ins Trust Center	Font size: 11 Default view for new sheets: Normal View Include this many sheets: 3 Benerative rows and following the Office
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	OK Cancel

iv. Select Excel Add-ins and click Go

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v. Select Analysis ToolPak and click OK.

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vi. Click the Data tab on the ribbon:



vii. Select Data Analysis:

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viii. Select Regression and click OK:

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ix. Fill out the Regression window as shown below:

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x. This will create the below data grid in a new tab:

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3	Regression St	atistics							
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5	R Square	0.48438538							
6	Adjusted R Square	0.35548173							
7	Standard Error	1.66476082							
8	Observations	6							
9									
10	ANOVA								
11		df	SS	MS	F	Significance F			
12	Regression	1	10.41428571	10.4142857	3.75773196	0.12459378			
13	Residual	4	11.08571429	2.77142857					
14	Total	5	21.5						
15									
16		Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
17	Intercept	10.8	1.549807976	6.96860525	0.00222936	6.49704323	15.1029568	6.49704323	15.1029568
18	x	0.77142857	0.397953951	1.93848703	0.12459378	-0.33346873	1.87632587	-0.33346873	1.87632587

Step 5: Create a scatter graph for selected data.

- a) Highlight cells A60-B65.
- b) Select the insert tab, show below:



c) Select Scatter, shown below:

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d) Select the Layout tab, shown below:

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e) Select Linear Trend line, shown below:

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f) This will create the trend line shown below:



- g) Display the equation of this line on the chart:
 - a. To do this, right click on **any one** of the points in the scatter graph (see below):



b. Select "Add Trendline," shown below:

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c. Check the box that says "Display equation on chart," (shown below):