Introductory Lab Exercise to Data Analytics using EXCEL

Using simple formulas

1. The following data of ABC company are available

Year	2008	2009	2010
Sales	500,000	650,000	750,000
Cost of goods sold	275,000	310,000	410,000
Expenses	75,000	230,000	200,000

Create a worksheet in Ms-Excel to calculate the following:-

a) Gross profit = Sales-cost of goods sold
b) Net Income= Gross profit-Expenses
c) Percentage of net income compared to the sales in each year

2. The total amount of business carried out by the four regions of City Bank for each month in the first half of year 2010 is available. Design a worksheet contains some arbitrary data to find the following:-

a) Total business for each zone for the year
b) Total business of all zones for each month
c) Average monthly business of each zone.

Using IF Formula

3. The amount of sales achieved by 10 sales representatives of a company for three
different types of product are available. The sales figures ranging from 5000 to 1 lakhs.

Calculate commissions payable for each type of products as given below:-

Less than	Rs 100,000	10%
	1-2 lakhs	11%
	2-3 lakhs	12%
above	3 lakhs	13%

An incentive of 10% of grand total sales amount will be given to each sales person if grand total of commission exceeds 50,000 . Find the total earning of

each sales person and categorize the sales person as below.

Total Earnings	Category
> 10 lakhs	Gold Winner
>=8 and < 10 lakhs	Silver Winner
>=5 and < 8 lakhs	Brass Winner

4. Making Income Tax Calculation

Design a spreadsheet to calculate the income tax of an individual based on the following rules:-

Standard deduction	: Rs 50,000 from Gross
Deduction for LIC savings upto a Maximum amount of 80,000	10% of the LIC amount paid
Rebate to senior citizens(>60 years)	Rs 15000
Additional Rebate to senior ladies	Rs 5000
Donations to national Emergency fund	Full amount donated
Tax Calculations	
Taxable income	Tax rate (total tax=)
50000-60000	10%
60001-100000	15%
100,000-300,000	20%
above 300,000	30%
Surcharge-	2% over tax computed
Education cess	3% over tax compound
Net Tax to be paid	Tax-surcharge-education cess

Initially data for 10 employees given with information like Name, Gross Salary for the year, SexCode, Age, LIC payment for the year, Donations to National emergency fund.

The data sheet should have columns for all the above data upto **Net Tax**

Using Absolute Addressing

5. A Bank offers Simple interest(1%) compounding monthly to the principal every month for a series of deposits (starting from 1000 incrementing 1000 each time upto 1,00000 - avoid entering data manually). Prepare a table (100x12) showing the calculation of simple interest on Principal at end of each month for 12 months using Simple interest formula.

Simple Interest = PNR - N stands for number of Months

Use only one and only one formula in the first calculation cell which has to be copied to other cells.

Simple Interest

---------- Principal/Year 1

2 3 4 ……12

1000 -- -- -- -- ---

……..

……..

1,00,000

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6. Modify exercise 5 in such a way that %of interest is to be fixed in a cell and provision for changing globally (using complete absolute address mode)

Using Standard Functions for aggregate computation

7.Create a work sheet contains the share values of 5 companies namely WIPRO, INFOSIS, ORACLE, IBM, TCS for one month using RAND() function assume that the share values ranging from 1 to 99.

(a) Using functions find the following for all the 4 weeks separately.

i) No of share values in the range
ii) Maximum Share Value
iii) Minimum Share value
iv) Average Share value
v) Variance of Share value

(b) Also find these figures for the entire month.
© Transfer each weeks figures including share values to separate sheets in the work book and rename the sheets as 1st week, 2nd week, 3rd week , 4th week.

Visual Analytics

In all the graphs/charts use suitable legends, Main title, X-axis title, Y-axis title etc. The output of each question and its subpart should be copied into a word file, appropriately arranged and with suitable chart titles.

8. The performance of three companies(in crores) in last 5 years is shown below.

Year	Company A	Company B	Company C	Company D
2004-05	134	59	120	100
2005-06	105	217	93	224
2006-07	90	210	169	265
2007-08	134	243	270	164

2009-10	96	211	147	228

Present the data using

a. Simple Bar diagram for Company A data only
b. Simple Bar diagram for Year 2007-08 data only
c. Multiple Bar diagram showing the whole data
d. Insert a raw for Year 2008-09, fill data, redraw the updated chart
e. Prepare a subdivided bar diagram to compare the performance of companies by using single bar for each year.
f. Modify the chart inserted as per question (e) in the following way

9. Percentage area irrigated by source is given below. Plot the data using a Percentage Bar Diagram

	Percentage Area Irrigated		
	2005-06	2006-07	2007-08
Govt Canals	37.1	37.4	38.4
Private Canals	4.3	3.0	2.7
Tanks	16.3	14.5	11.3
Wells	32.5	36.8	40.8
Other Sources	9.7	8.3	7.0
	100	100	100

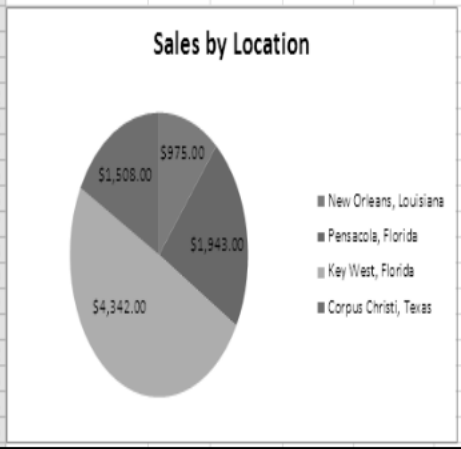
10. Sarah runs a travel agency called Gulf Coast Destinations. Customers can choose from four different travel locations. Sarah takes trip reservations by mail, phone, online, and by appointment in her office. Sarah tracks her annual sales to help her make business decisions.

Make a spreadsheet that looks like the one below:

Gulf Coast Destinations Annual Sales 2013				
Location	**Mail**	**Phone**	**Online**	**Appointment**
New Orleans, Louisiana	65	122	388	400
Pensacola, Florida	133	488	500	822
Key West, Florida	355	966	1599	1422
Corpus Christi, Texas	144	299	488	577

Make Charts/Graphs exactly as shown below

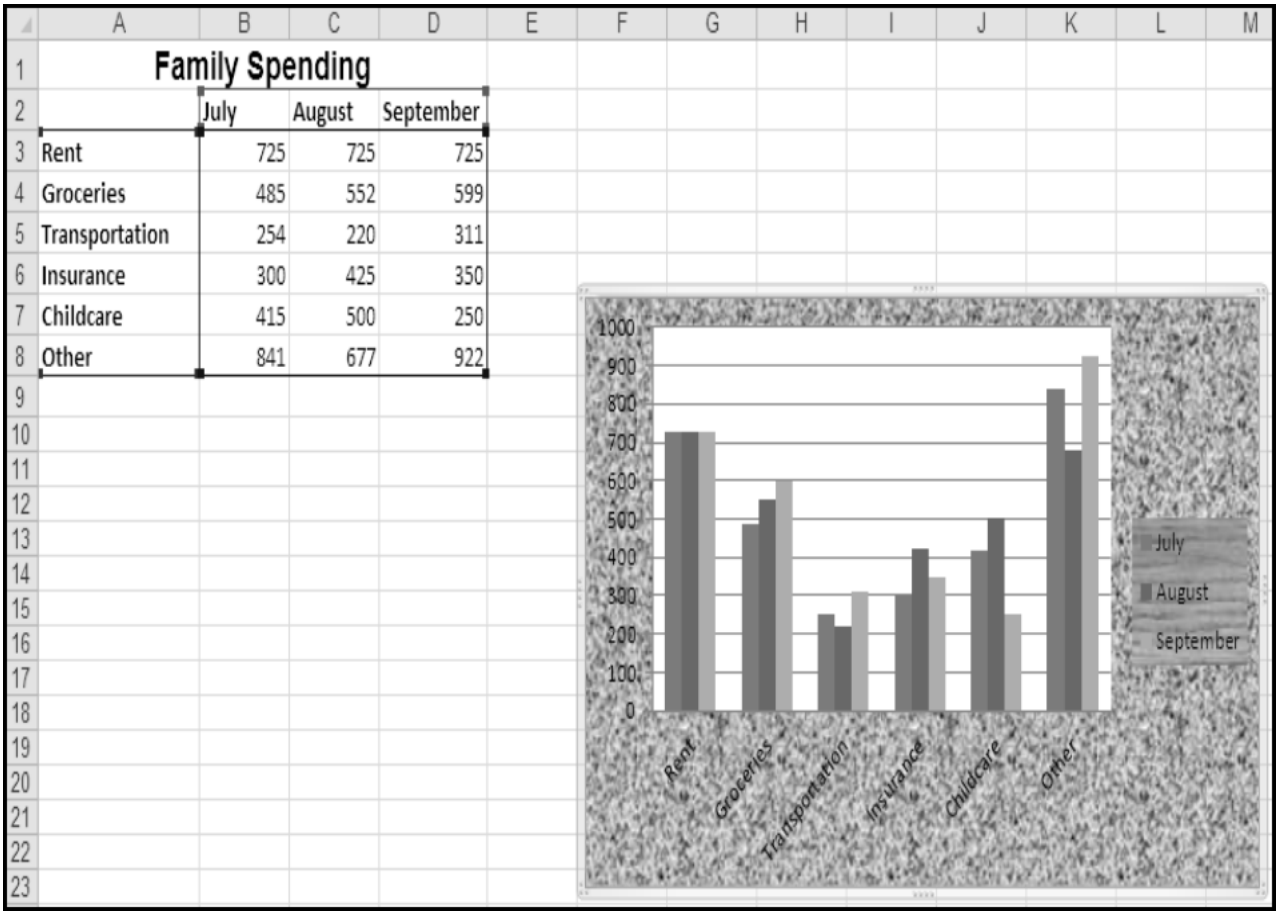
	A	B	C	D	E	F
1	Gulf Coast Destinations Annual Sales 2011					
2	Location	Mail	Phone	Online	Appointment	
3	New Orleans, Louisiar	$ 65.00	$ 122.00	$ 388.00	$ 400.00	$ 975.00
4	Pensacola, Florida	$133.00	$ 488.00	$ 500.00	$ 822.00	$1,943.00
5	Key West, Florida	$355.00	$ 966.00	$1,599.00	$ 1,422.00	$4,342.00
6	Corpus Christi, Texas	$144.00	$ 299.00	$ 488.00	$ 577.00	$1,508.00
7		$697.00	$1,875.00	$2,975.00	$ 3,221.00	$8,768.00



11 Eli started keeping track of his family's monthly spending on rent, groceries, transportation, insurance, childcare, and other expenses. He will use the following information he has collected to make decisions on his family's budget and how much money they can save each month.

	A	B	C	D
1	Family Spending			
2		July	August	September
3	Rent	725	725	725
4	Groceries	485	552	599
5	Transportation	254	220	311
6	Insurance	300	425	350
7	Childcare	415	500	250
8	Other	841	677	922

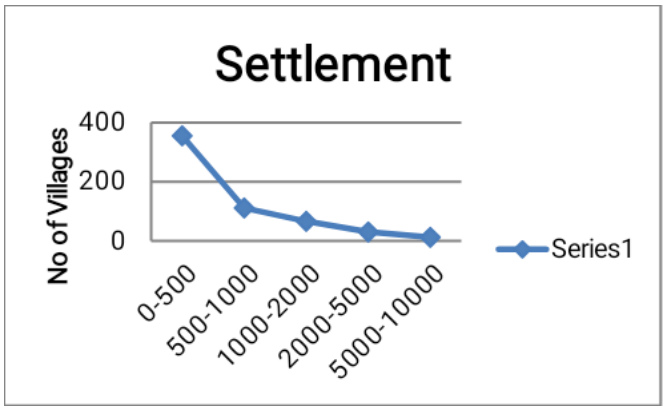
Make a chart to compare the data as shown below, Give appropriate headings , the shading should be given exactly as shown (refer tips2.doc available in sparkle yahoo group)



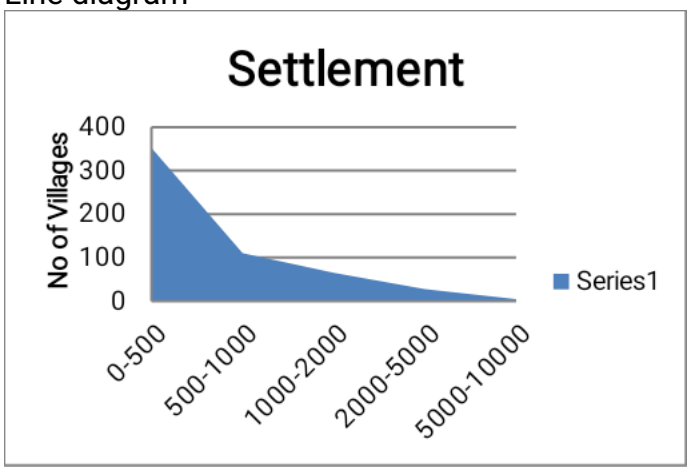
12. The distribution of rural settlement in india is given below

Size of Village	0-500	500-1000	1000-2000	2000-5000	5000-10000
No of villages	352	110	65	27	4

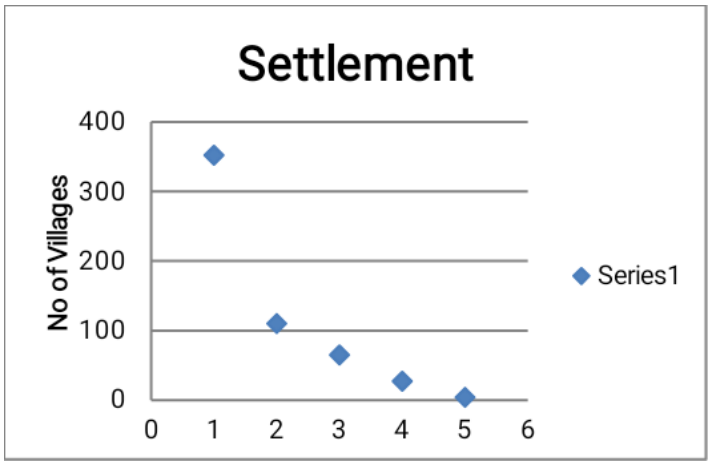
a. Represent the data in a line graph. Add additional sheets in excel which contain the line graph with all available features. (as shown below)
b. Draw an area graph to show the data(as shown below)
c. Draw a scater diagram to show the distribution of data(as shown below)



Line diagram



Area Diagram



d. Draw the less than ogive
e. Drew the greater than ogive

Cumulative Frequency Distribution

13. A table containing age and number of people in a locality as follows. Prepare less than cumulative frequency and greater than cumulative frequency.

Class	No of People	<cumulative Frequency	>cumulative Frequency
0-10	100		
11-20	200		
21-30	400		
31-40	150		
Above 40	140		

Descriptive Analytics

14. Use a worksheet containing District, Number of Police and Number of Robbery that contains data on 14 district to calculate following descriptive Analytics measures about the data.

(a) Mean to find out the average values in both the numbers
(b) Standard deviation to find the consistency level in each of the above field
(c) Skewness to measure the symmetry of the frequency curve

(d) Kurtosis, whether the data are heavy-tailed or light-tailed relative to a normal distribution.

(e) frequency distribution to make frequency table for Number of robbery with interval length 10.

(f) Kearl Person correlation coefficient to check whether the variables Number of Police and Number of Robbery are correlated and to see the degree of correlation.

(g) To obtain the scatter plot to see the pattern of relationship between variables Number of Police and Number of Robbery and to see the extreme points.

Predictive Analytics

(If the DATA ANALYSIS option is not listed towards the bottom of the TOOLS menu, then it must be activated. To do this open the TOOLS menu, select the ADD-INS... option. Click on the empty box to the left of "Analysis Tool Pak" and click on OK.)

15. Create an excel sheet containing the population details of a country for the 20 years from 2000 to 2020 by entering data in the following form

Year	Year Variable (X)	Population (in corores) (Y)
2000	0	120
2001	1	123
2002	2	124
……	……	……
2020	19	132

Use the regression analysis obtain a regression equation y on x using the formula

Y = X variable coefficient x X+ Intercept

And predict the population figure for 5 years from 2021 to 25.

(To use the regression tool in EXCEL, open the TOOLS menu, select the DATA ANALYSIS option, select the REGRESSION tool (you may have to scroll down in

the
list of analysis tools until regression appears), choose x and y variable and click on OK.- The value of intercept and the X variable coefficient can be used in the above expression to form the y on x regression equation)