Practical 3.1

Exercise P1: Measures of location

1. Open your textbook on p.109 at the **2012StartSalary** file.
2. On the computer, open the **2012StartSalary** file on ClickUP in the ***Data files for Practicals*** folder
3. Calculate the average monthly salary for the 12 graduates by entering the following formula in cell C2: **=average(B2:B13)** Compare your answer with the answer on p.112.
4. Calculate the median monthly salary for the 12 graduates, by entering the following formula in cell C3: **=median(B2:B13)**. Compare your answer with the answer on p.112.
5. Calculate the modal monthly salary for the 12 graduates, by entering the following formula in cell C4: **=mode(B2:B13)**. Compare your answer with the answer on p.112.

Do Exercise 10a in the textbook on p.122 by making use of Excel 2010. Open the **JacketRatings data** file on ClickUP in the ***Data files for Practicals*** folder. *Compare your answers with the textbook answers on p.961.*

Exercise P2: Percentiles

Open your textbook on p.109 at the **2012StartSalary** file.

1. On the computer, open the **2012StartSalary** file on ClickUP in the ***Data files for Practicals*** folder

2. Calculate the p-th percentile for monthly salary, by entering the following formula in cell C3: **=percentile.exc(B2:B13,p/100)**.

3. Calculate quartiles for monthly salary, by entering the following formula in cell C3: **=quartile.exc(B2:B13,quart)**, where quart = 1, 2 and 3

Formula sheet

	A	B	C
1	Graduate	Monthly Starting Salary ($)	
2	1	3850	=PERCENTILE.EXC(B2:B13,0.8)
3	2	3950	=QUARTILE.EXC(B2:B13,1)
4	3	4050	=QUARTILE.EXC(B2:B13,2)
5	4	3880	=QUARTILE.EXC(B2:B13,3)
6	5	3755	
7	6	3710	
8	7	3890	
9	8	4130	
10	9	3940	
11	10	4325	
12	11	3920	
13	12	3880	

Value sheet

	A	B	C
1	Graduate	Monthly Starting Salary ($)	
2	1	3850	4082
3	2	3950	3857.5
4	3	4050	3905
5	4	3880	4025
6	5	3755	
7	6	3710	
8	7	3890	
9	8	4130	
10	9	3940	
11	10	4325	
12	11	3920	
13	12	3880	

Note: The **median** is the **50th percentile.** The **first quartile** is the **25th percentile** and the **third quartile** is the **75th percentile**.

Do Exercise 10b and c in the textbook on p.122 by making use of Excel 2010. Open the **JacketRatings data** file on ClickUP in the ***Data files for Practicals*** folder. *Compare your answers with the textbook answers on p.961.*

Exercise P3: Measures of Variability

a) Calculating the Sample Variance by using a spread sheet.

1. Open your textbook on p.109 at the 2012StartSalary file.
2. On the computer, open the **2012StartSalary** file on ClickUP in the ***Data files for Practicals*** folder
3. Calculate the average monthly salary for the 12 graduates by entering the following formula in cell C2: **=average($B$2:$B$13)**. The reason for the $ signs in front of and after the column reference is to instruct Excel to use the specified range B2:B13, and not to change the cell reference once you copy the formula to other cells.
4. Copy this formula to C3:C13, by dragging the formula to these cells. Make sure that the cell references remain the same once you have copied the formula. **Note:** The sample mean calculated in all the cells in columns C is the same.
5. Calculate the deviation about the mean, by entering the following formula in cell D2: **=B2-C2**.
   Copy this formula to D3:D13, by dragging the formula to these cells.
6. Calculate the squared deviation about the mean by entering the following formula in cell E2:**=D2^2**. Copy this formula to E3:E13, by dragging the formula to these cells.
7. Calculate the sum of the squared deviation in cell E14, by entering the following formula in cell E14: **=SUM(E2:E13)**
8. When calculating the sample variance, one needs to divide the sum of squared deviations by n-1, which in this example is equal to 11.
9. To get the answer for the sample variance, enter the following formula in cell E15:**=E14/11**.
10. Compare your answer to the answer on p.130 of your textbook.
11. To get the answer for the sample standard deviation, enter the following formula in cell E16:**=sqrt(E15)**. **Note:** the **sqrt**-function calculates the square root of the value in the specified cell.
12. Compare your answer to the answer on p.130 of your textbook.

b) Calculating the sample variance by using the formula =var(B2:B13).

1. Open your textbook on p.109 at the Graduate salary example.
2. On the computer, open the **2012StartSalary** file in the **Chapter 03 Descriptive2** folder.
3. Calculate the sample variance for the 12 graduates, by entering the following formula in cell C2:**=VAR(B2:B13)**. Compare your answer to the answer you obtained in Exercise P3 a) step 9 above.

4. Calculate the sample standard deviation for the 12 graduates, by entering the following formula in cell F3: **=STDEV(B2:B13)**. Compare your answer to the answer you obtained in Exercise P3 a) step 11 above.

Do Exercise 28a and b in the textbook on p.134 by making use of Excel 2010. Open the **AustralianOpen data** file on ClickUP in the ***Data files for Practicals*** folder. *Compare your answers with the textbook answers on p.963.*