Terms and Definitions

Spreadsheet

A spreadsheet is for numbers, what a word-processor is for words, a tool for manipulating the numbers more readily than the manual manipulation of numbers. A spreadsheet is a powerful tool used for manipulating, validating, and analysing numerical data.

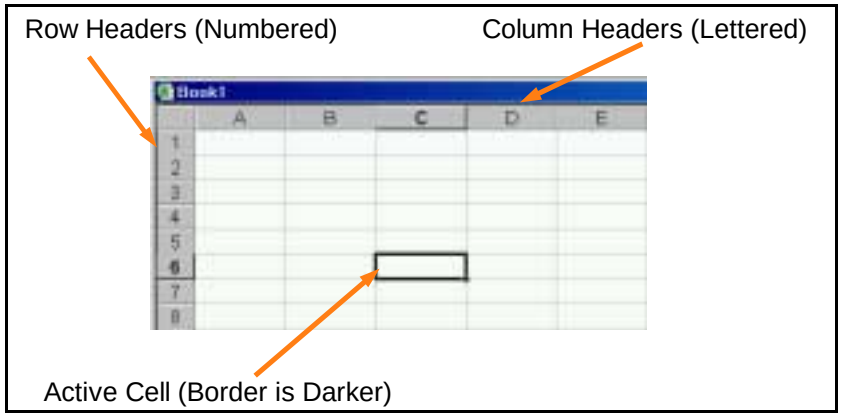
- A spreadsheet consists of cells organised into rows and columns.
- A spreadsheet is sometimes referred to as a worksheet because parts of its conceptual design (definable rows and columns, mathematical calculations) originated from the worksheets used by accountants.
- A worksheet refers to one sheet of numbers, labels, formulas.
- A workbook refers to a book of sheets.

Usefulness of Spreadsheets – What do people use it for ?

A spreadsheet has many uses for business and home, for any individual with a lot of numbers that needs to be analysed, manipulated. Examples of uses for spreadsheets include:

- Preparing budgets for companies and individuals
- Planning for changes in the future by using formulas and creating potential scenario changes.
- A simple database for information such as employee/client details, payroll data, addresses and telephone numbers
- A simple database for stock inventory at a store.
- Generating and displaying charts to simplify the interpretation of numeric data.

Diagram: A sample spreadsheet page



Spreadsheet Page

The spreadsheet page is divided into rows and columns. The rows are labeled down the left with numbers, and the columns are labeled along the top with letters.

Spreadsheet Cell

Each rectangle created at the intersection of the column header and row header is called a cell. By using unique headers for each column and each row a cell can be uniquely identified, pointed to.

- A Cell is the intersection of a row and a column
- Each row and column creates a unique cell.
- Each cell is displayed on the screen as a rectangular shape which can store text (label), value, or a formula.

Active Cell

The active cell, also called the 'current' or 'selected' cell, is the cell (intersection of a particular row and column) that is the current focus of activity. Graphically, as in the above picture, the border for the active cell (the intersection of column B and row 4 in our illustration) is darker than the surrounding cells. The active cell receives the actions of the user, such as data entry, editing, for-

matting.

Cell Referencing, Cell Addressing

A cell reference, or cell address, is the unique co-ordinate system used to identify a specific cell. For example, by using the column header and row header combination we can uniquely identify (point to) A5, H8, and E2 without mistaking the location for another cell.

- A5 refers (or points) to Column A row 5
- H8 refers (or points) to Column H row 8
- E2 refers to Column E row 2

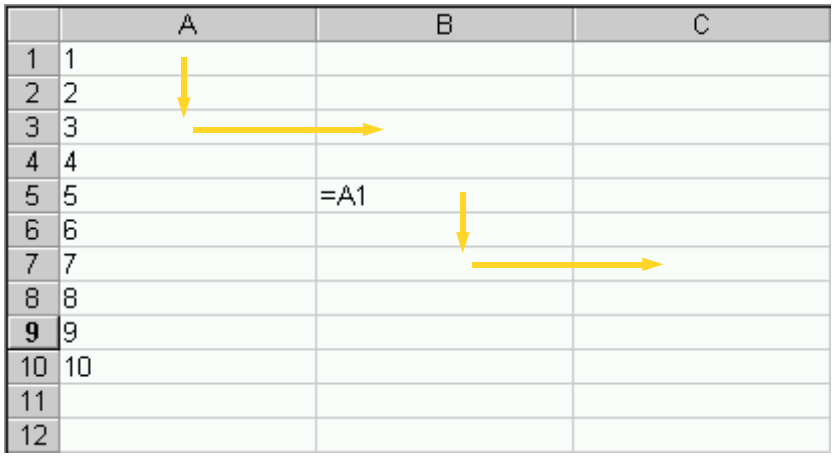
There are two types of cell referencing supported by most spreadsheets: Absolute Reference and Relative Reference.

Relative Reference.

A relative reference allows the spreadsheet to adjust (move the reference) if the user decides to re-arrange the location of cells in his or her spreadsheet.

Reference Location: B5
Moved To: C7
Formula Reference: A1
New Reference in Cell C7: A1 ⇨ B3

In the above diagram, cell B5 has a reference in it to Row A, Column 1



When we move (by using Copy/Paste) the contents of cell B5 to cell C7, we have moved the contents down 2 rows, and to the right one row.

- row 5 has changed to row 7 : a change of two rows down
- column B has changed to column C : a change of 1 column to the right.

The spreadsheet makes the exact same change to the reference.

- reference to row 1 changes two rows down : it now refers to row 3. [1 ⇨ 3]
- reference to column A changes one column to the right : it now refers to column B. [A ⇨ B]
- A1 ⇨ B3

Microsoft Excel uses relative referencing by default.

Absolute Reference.

An absolute reference forces the cell referencing to always point to where it was originally set even if the user rearranges the cells. When copied, or moved from one cell to another, the cell reference does not change, as in the relative reference.

To distinguish the difference between an Absolute Reference and a Relative reference, the key symbol "$" dollar sign is used.

- H4 – refers to Column H absolute, and row 4 absolutely.
- $A3 – refers to Column A absolutely, and row 3 relatively.
- G$15 – refers to Column G relatively, and row 15 absolutely.

For the previous diagram, the following differences would occur with Absolute referencing.

Reference Location: B5
Moved To: C7
Formula Reference: **$**A$1
New Reference in Cell C7: A1 ⇨ A1

After moving the cell, $A refers to column A absolutely and does not change. $1 refers to row one absolute, and does not change. A1 ⇨ A1

Reference Location: B5
Moved To: C7
Formula Reference: **$**A1
New Reference in Cell C7: $A1 ⇨ $A3

After moving the cell, $A refers to column A absolutely and does not change. 1 refers to row one relatively, and does change by two rows to row 3. $A1 ⇨ $A3

Reference Location: B5
Moved To: C7
Formula Reference: A$1
New Reference in Cell C7: A$1 ⇨ B$1

After moving the cell, A refers to column A relatively and does change one column to the right, A⇨ B. $1 refers to row one absolutely and does not change $1 ⇨ $1. A$1 ⇨ B$1

Cell Range

The Cell Range refers to more than one cell as a group. A cell range usually refers to a single block of cells in a large rectangle.

If a block of cells is 'highlighted/selected' beginning at the top-left with cell B10 and going down to the bottom-right at F15, then the range is B10 –to– F15, or written in the format B10:F15

- top-left cell (colon) bottom-right cell.

Valid Data for a Spreadsheet Cell

A spreadsheet cell can contain three types of data: Value, Formula, Text

Value

A value is a number. Anything that can be counted, or have a numbered amount is a value. Numbers can be entered as percentages, dollar values, decimal, and integer values.

Formula

A formula is any valid mathematical equation that uses numbers or other cells together with the arithmetic operators and spreadsheet functions.

- The valid operators are the mathematical addition (+), subtraction (-), division (/), and multiplication (*).
- The valid operands (things to be operated on) are numbers or references to cells which the operator can work on.

Note: Spreadsheet formulas follow the standard arithmetic order of operation rules summarised by the term: BEDMAS

Level 1	**B**rackets
Level 2	**E**xponentiation
Level 3	**D**ivision and **M**ultiplication
Level 4	**A**ddition and **S**ubtraction

- Higher levels are calculated before the levels below it. Level 1 (Brackets) have precedence, or are calculated before Level 2, 3, and 4. Likewise, Level 2 has higher priority and is calculated before Level 3, and 4.

- Operations in the same level (for example Level 3, Multiplication and Division) can be performed in any order. 2 * 3 / 2 provides the same answer whether the multiplication is calculated first than the division, or the division is calculated first before the multiplication.

Excel Functions (built-in formulas such as SUM to add cells together) are calculated after the operands have been evaluated, and before other calculations in the formula.

Text

Text or Labels are letters (characters) that are placed in cells. They are generally used to help describe (label) the numbers and formulas.

Sources and References:

Adapted from notes originated and supplied by Tonga Siliva

http://www.tongatapu.net.to/compstud/ - Computer Studies Course Notes
http://www.tongatapu.net.to - **Tonga** on the **'NET**

Tonga on the **'NET** is available on all networked computers at Queen Salote College and participating schools.

Description of the Booklet

This booklet is based on the "Introductory Spreadsheet Exercises" book by Denise Pavic and Nelson Press.

The exercises have been modified to reflect the use of Microsoft Excel.

The exercises in this booklet are broken into at most four different sections with the following aims:-

a – to develop skills in entering data in a worksheet, centre, right and left justify labels, determine and change column widths, print and file a worksheet.

b – to develop skills in retrieving a worksheet, centre, right and left justifying labels, editing data, changing column widths, formatting cells to commas, currency, percentage, fixed decimal, using the copy and repeat functions, inserting/deleting/moving rows and columns, freezing titles vertically and horizontally, printing all or part of the worksheet.

c – to develop skills in retrieving a worksheet, entering a formula (adding, subtracting, dividing, multiplying, percentage), *What if* statements, MAX, MIN, AVERAGE, print all or part of a worksheet, entering data into a worksheet with pre-entered formulae.

d – to develop skills in retrieving a worksheet, creating single/multiple graphs for a worksheet (bar, line, stacked bar, XY, pie), naming a graph, saving a graph, retrieving a graph, printing a graph, reset the graph, printing graphs in colour/black and white, displaying formulae.

Sources and References:

"Introductory Spreadsheet Exercises" book by Denise Pavic and Nelson Press.

http://www.qsc.edu.to - Queen Salote's SchoolNET Website
http://www.tongatapu.net.to - **Tonga** on the **'NET**

Queen Salote's SchoolNET Website does not require Internet access as it is not connected to the world wide Internet but uses the same technology within Queen Salote College and participating schools.

http://www.qsc.edu.to is available on all networked computers at Queen Salote College.

January 4, 1999

Unit 1

Graduates

Exercise 1a

1. Enter in your worksheet details of students who have graduated from Queens University over the past four years. You should enter the data in the columns and rows indicated. Do not type the column letter or the row numbers in your spreadsheet.

	A	B	C	D	E
1	SCHOOLS	1988	1989	1990	1991
2					
3	Lalanga	3982	3999	4012	4350
4	Tuitui	5001	5280	5366	5550
5	Ngäue mo'ua	1098	1300	1298	1503
6	Fika	492	2931	2999	3050
7	Saienisi	2067	2193	2282	2485

2. Where have the labels been entered in the cells (write down the Cell Range where the Labels have been entered) ?

   .....

3. Where have the numbers been entered in the cells (write down the Cell Range where the numbers have been entered) ?

   .....

4. Save the worksheet and name the file "**Graduates**".

5. You wish to commence a new exercise, write down the steps you have to go through to create a new spreadsheet.

   .....

6. Select (Highlight) the worksheet by clicking on the top left hand corner (where the row headings and column headings intersect) and change the font settings for the spreadsheet to.

   - select the Font: Arial,
   - Size: 10

Exercise 1b

7. What is a file extension, and what file extension has been added to your spreadsheet file. For what purpose is the file extension used ?

8. Right justify the headings over all columns. Do not right justify any other items.

9. Change the label 1991 to 1992

10. Insert a new column in E and enter the label heading *"1991"* over the blank new column.

11. Enter the below data for each of the schools under the new 1991 column heading..

Lalanga	4136
Tuitui	5409
Ngäue Mo'ua	1397
Fika	3001
Saienisi	2345

12. Insert a row between Ngäue Mo'ua and Fika.

13. Enter the statistics for the School of "*Musika"* for the years 1988 to 1992.

1988	1989	1990	1991	1992
3129	3384	3421	3550	3902

14. Change the column width of column A to 12

15. Format the cells in columns B to F containing the figures to Comma Style *(Number using a comma to separate 1000s (ie. "use 1000 separator (,))* with no decimal places.

    - Do not include the column headings. How do the numbers in columns B to F now appear in your worksheet.

16. Type the label heading "*TOTAL"* in cells A10 and G1.

    - Right justify the heading in cell G1

17 Format Row 10 Column A to Column G to have a border with a line above and below the cells.

Exercise 1c

16. Total the number of graduates per year by totalling column B (1988) into Row 10.

    - Use AutoFill to copy the formula in column B, row 10 across for the years 1989-1992.
    - Enter the answer in row 10 in the space below:

    1988 ..... 1989 ..... 1990 .....

    1991 ..... 1992 .....

17. Total the number of graduates per school for the five year period 1988-1992.

    - Enter the formula into column G and the answer in the space below.

    Lalanga ..... Tuitui ..... Ngäue Mo'ua .....

    Fika ..... Saienisi ..... Musika .....

18. Look at the totals in row 10 and column G. The look, formatting is inconsistent with the other columns in the worksheet. Format the totals to Comma Style with no decimal places.

19. Enter and right justify the label heading "*1993 Expected Graduates*" in cell H1.

    - Increase the column width to 15
    - Format the Cell to Alignment Wrap Text
    - Make sure the Row Height is 25.50

20. *How many students can the University expect to graduate in 1993?*

    - In the new column for each school, calculate the average number of students graduating between 1988 and 1992 *(over the last five years.)*

- You should calculate the average for the 1st school in the list, *("School of Lalanga")* and use AutoFill to copy the formula down for each school.
- Total the expected graduates.
- Write down your findings in the space below.

Lalanga ..... Tuitui ..... Ngäue Mo'ua .....

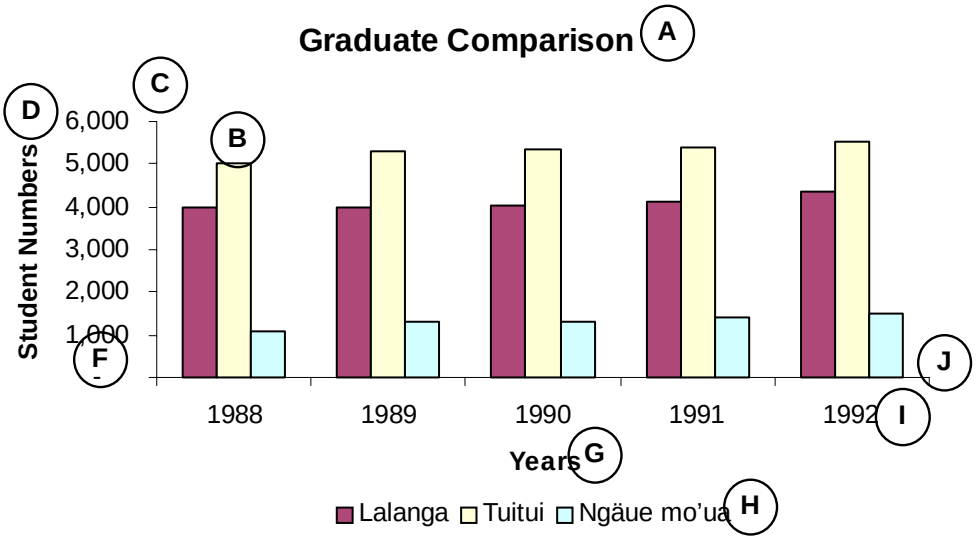
Fika ..... Saienisi ..... Musika .....

Total Expected Graduates:.....

- Format the column H to Comma Style with no decimal place..

21 Extend the borders rows 10 to column H (to improve the look of the worksheet)

Exercise 1d



22. The graph below was produced using an electronic spreadsheet. Label the parts of the graph from the terms listed: *X axis, Y axis, X axis heading, Y axis heading, Graph Title, X-axis Title, Y-axis Title, Graphed Data, Legend*

A. ..... B. ..... C. .....

D. ..... E. ..... F. .....

G. ..... H. ..... I. .....

J. .....

23. The graph above refers to Unit 1. Study the graph and write below what the graph is comparing.

SCHOOLS	1988	1989	1990	1991	1992	**Category (X) axis Title**
Lalanga	3,982	3,999	4,012	4,136	4,350	**Series 1**
Tuitui	5,001	5,280	5,366	5,409	5,550	**Series 2**
Ngäue Mo'ua	1,098	1,300	1,298	1,397	1,503	**Series 3**
Musika	3,129	3,384	3,421	3,550	3,902	
Fika	492	2,931	2,999	3,001	3,050	
Saienisi	2,067	2,193	2,282	2,345	2,485	

23. Produce the graph above by following the graph procedures for Microsoft Excel and by highlighting the cells specified on the worksheet below.

    - Standard Type : Column

    - Data Range : Rows
    - Series 1 – Lalanga
    - Series 2 – Tuitui
    - Series 3 – Ngäue Mo'ua
    - Category (X) axis labels: *(highlight 1988 – 1992)*

    - Chart Title – Graduate Comparison
    - Category (X) axis Title – Years
    - Value (Y) axis Title – Student Numbers
    - Legend : Bottom

24. Save the graph.

Unit 2

Sales

Exercise 2A

1. Record the daily sales of each department of Tae's Supermarkets for week 8 of 1998. Key in the data below. Do not type the column letters or the row numbers in your spreadsheet.

	A	B	C	D	E	F
1						
2	Day	Deli	Dairy	Liquor	Bakery	Meat
3						
4	Mon	12344.56	11567.78	20785.89	15888	14322.22
5	Tues	10234.77	8006	20600	10765	16999.71
6	Weds	16999	12034.55	21342.89	13255.87	10000
7	Thurs	17844.11	12034.55	24555.66	15433.89	18765.44
8	Fri	25666.99	18999	28999	18765.11	19765
9	Sat	26000	20987.41	35789.01	20000	25099.33

2. Save the worksheet as *"Tae's Sales"*

3. What rules does your Spreadsheet have regarding the naming of worksheets ?

4. Name two ways of making a selection from the spreadsheet menu.

5. Select (Highlight) the worksheet by clicking on the top left hand corner (where the row headings and column headings intersect) and select the Font: Times New Roman; Size: 12 for use on the spreadsheet.

Exercise 2b

6. Adjust the width of column A to 14 and type the days in full.
   - Type in the label *"Dept. Total"* in cell A11
7. Format cells B4 to G4 to currency with two decimal places.
   - What now appears in these cells ?
8. Increase the width of columns B to E to 12
9. Format the cell range B5:G9 to Comma Style with two decimal places.
   - What has happened to the numbers in these cells ?
10. Format the cell range B11:G11 to currency with two decimal places.
11. Liquor sales are recorded on a separate spreadsheet. Delete column D.
12. Centre label headings over all columns.

13. Insert a blank column in column C.

    - Adjust the cell width to 15
    - Enter the label *"Confectionary"*
    - Enter the below Sales for Confectionary

Monday	26894
Tuesday	38261.55
Wednesday	15063.19
Thursday	56031.50
Friday	60938.21
Saturday	70236.99

14. Format cell C4 to currency with two decimal places.

    - Format the rest of the column to Comma Style with two decimal places.

15. Format Row 9 Column A to G to have a border-line below the cell.

16. Key in the label "*Daily Total"* in G2.

    - Extend the formatting (border top and bottom) in row 2 and shown in the sample diagram.

17. Save the changes you have made in the spreadsheet.

Exercise 2c

18. Put a label in A11 called "Department Total"

19. Total the sales for each department by totalling the sales for Deli and using AutoFill to copy the formula across from Columns B to F.

20. Monday's sales for the Dairy Department were $12,567.89. Amend this figure on your worksheet. How does this affect the answer in the total column?

21. Total the daily sales of all departments.

22. Put the following labels into the spreadsheet:

    - A12: Highest Sales
    - A13: Lowest Sales
    - A14: Average Sales

23. Calculate the Highest Sales per department by using formulas and putting it into row 12.

24. Calculate the Lowest Sales per department by using formulas and putting it into row 13.

25. Calculate the Average Sales per department by using formulas and putting it into row 14.

26. Total the daily sales for each department into the "*Daily Total"* column.

27. Next week is Christmas and Tae's Supermarkets anticipates a 50% increase in the sales of all departments.

    - Increase the width of column H to 12.
    - Insert a blank row in rows 3 and 5
    - Add the following label headings
    - H2: Anticipated
    - H3: Daily Sales
    - A18: Anticipated
    - A19: Dept. Sales

28. Tae believes she will get an increase of 50% of sales during the Christmas week. Calculate the anticipated sales for each day using formulas.

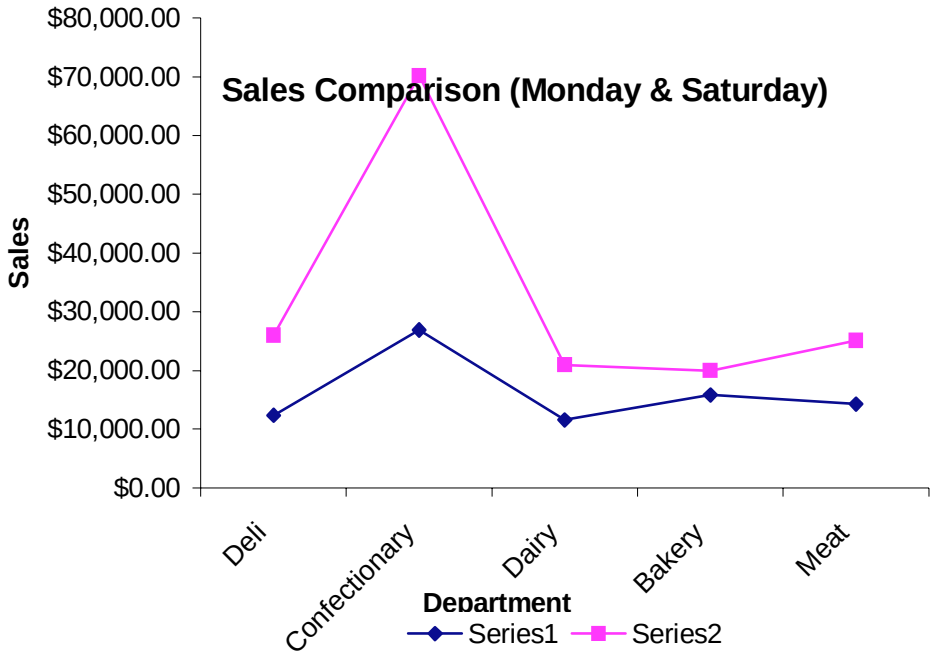
    - (Dept. Total x 1.50) = Week's Anticipated Sales

29. Save changes to the spreadsheet and it should look something like the below example.

Exercise 2d

23. Produce the graph above by following the graph procedures for Microsoft Excel and by highlighting the cells specified on the worksheet below.

Day	Deli	Confectionary	Dairy	Bakery	Meat	X axis titles
Monday	$12,344.56	$26,894.00	$11,567.78	$15,888.00	$14,322.22	Series 1
Tuesday	10,234.77	38,261.55	8,006.00	10,765.00	16,999.71	
Wednesday	16,999.00	15,063.19	12,034.55	13,255.87	10,000.00	
Thursday	17,844.11	56,031.50	12,034.55	15,433.89	18,765.44	
Friday	25,666.99	60,938.21	18,999.00	18,765.11	19,765.00	
Saturday	26,000.00	70,236.99	20,987.41	20,000.00	25,099.33	Series 2
Department Total	$109,089.43	$267,425.44	$83,629.29	$94,107.87	$104,951.70	
Highest Sales	$26,000.00	$70,236.99	$20,987.41	$20,000.00	$25,099.33	
Lowest Sales	$10,234.77	$15,063.19	$8,006.00	$10,765.00	$10,000.00	
Average Sales	$18,181.57	$44,570.91	$13,938.22	$15,684.65	$17,491.95	
Anticipated Daily Sales	$163,634.15	$401,138.16	$125,443.94	$141,161.81	$157,427.55	



- Standard Type : Line

- Data Range : Rows
- Series 1 – Monday *(or highlight Monday from the worksheet)*
- Series 2 – Saturday *(or highlight Saturday from the worksheet)*
- Category (X) axis labels: *(highlight Deli –through to– Meat)*

- Chart Title – Sales Comparison (Monday & Saturday)
- Category (X) axis Title – Department

- Value (Y) axis Title – Sales
- Legend : Bottom

24. Save the graph.

Unit 3

Notes

Exercise 3A

1. Enter the number of notes printed by the Commonwealth Mint over the past three years in the cells specified. Do not type the column letters or the row numbers in the spreadsheet.

	A	B	C	D	E
1	**Commonwealth Mint**				
2	**Notes Printed 1989-199**				
3	**($1,000,000)**				
4					
5	Dollar Note	1989	1990	1991	
6	100	45	34.67	31.9	
7	50	32.45	34.1	44	
8	20	50.3	54.6	53.9	
9	10	70.39	62.22	65.7	
10	5	64.86	68	76.1	
11	2	85.3	89.99	95	

2. Name the Spreadsheet Tab **Bank Notes**

3. Save the Spreadsheet as **Commonwealth Mint**

4.

Exercise 3B

5. Right justify the label heading Dollar Note in column A

6. Put a line border as shown in the diagram, above and below row 5

7. Enter the label Year Total in cell A13

8. Put a line border below cells A13:E13

9. Format the cell range B6:D15 to fixed with one decimal place. Write in the space below how this has changed the number display from the diagram shown above.

10. Only one decimal place is shown in the columns B-D. Give a mathematical explanation *(ie describe why the computer has selected the number it shows)* for why some numbers are bigger than the number shown in the diagram, while other numbers are smaller. *(eg. B10 has 64.86 but shows 64.9, C9 has 62.22 but shows 62.2)*

11. The spreadsheet shows the number of $2 notes printed from 1989-1991. There is no longer a $2 note. Delete the row from the spreadsheet.

12. Save the changed worksheet as **Commonwealth Mint – Update 1**

Exercise 3C

13. Format columns E6:F15 to fixed with one decimal place

14. Total the number of notes printed each year from 1989 to 1991 by totalling the notes printed in 1989 into the cell B13 and copying the formula across to 1991 column.

15. Total the number of each note printed over the three year period. Head the column **Total Notes** in cell E5 and enter the correct formula to make the calculations into column E.

16. Enter the heading **Average** in cell F5. Right justify the heading. Calculate the average number of each note printed over the three years using a formula and place the formula in the appropriate cells.

17. Enter the label heading **1989/91 Comparison** in cell G5. Subtract the number of each dollar note printed in 1989 from the number printed in 1991. Enter your formula in column G.

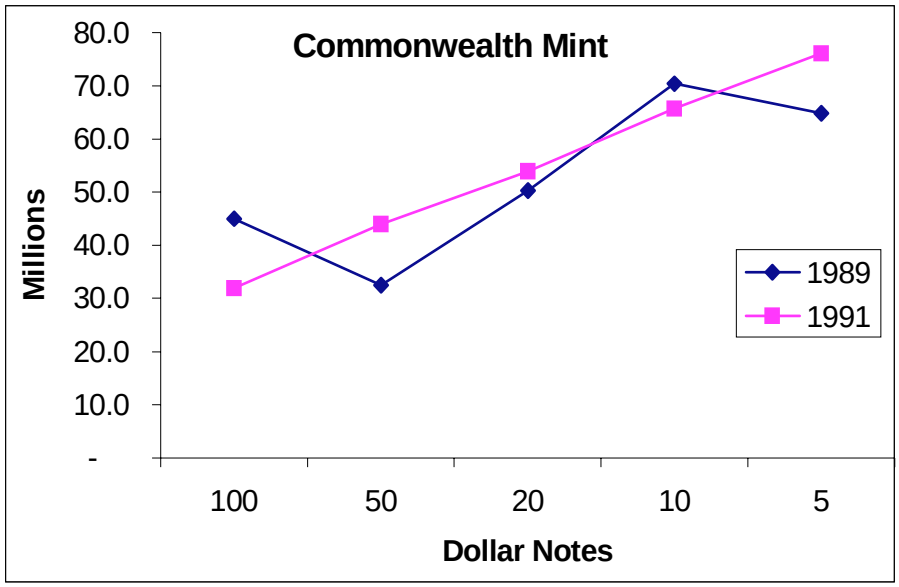
18. Extend the borders in Row 5 and 13 to reach Column G.

Exercise 3d

19. Use a line graph to illustrate the production of 5, 10, 20, 50 and 100 dollar notes in 1989 and 1990. Highlight the cells specified below

Commonwealth Mint
Notes Printed 1989-199
($1,000)

Dollar Note	1989	1990	1991	Total Notes	Average	1989/91
100	45.0	34.7	31.9	111.6	37.2	13.1
50	32.5	34.1	44.0	110.6	36.9	-11.6
20	50.3	54.6	53.9	158.8	52.9	-3.6
10	70.4	62.2	65.7	198.3	66.1	4.7
5	64.9	68.0	76.1	209.0	69.7	-11.2
Category axis	1 Data Range		2 Data Range			



- Standard Type : Line

- Data Range : Columns
- Series 1 – 1989 *(or highlight 1989 from the worksheet)*
- Series 2 – 1991 *(or highlight 1991 from the worksheet)*
- Category (X) axis labels: *(highlight 100 –through to– 2 in column A)*

- Chart Title – Commonwealth Mint
- Category (X) axis Title – Dollar Notes
- Value (Y) axis Title – Millions
- Legend : Right

Unit 4

Gym

Exercise 4a

'Atele Sports Complex has four tennis courts, two volley ball courts, four squash courts, and one racquet ball court. To help management keep track of the popularity and availability of the facilities, a spreadsheet is used to record details of use.

1. Set the following column widths for the spreadsheet.
   - Column A. 14
   - Column B. 10
   - Column C. 8
   - Column D. 8
   - Column E. 8
2. Set all cells to the following formatting:
   - Arial
   - 10
3. Enter into the worksheet the game and court booking details.

	A	B	C	D	E
1					
2	Game	Court No	Hours Booked	Hourly Rate	Amount
3	Volley ball		2	3	10
4	Racquet ball		1	1	9.5
5	Squash		4	1	9.9
6	Volley ball		2	1	10
7	Tennis		3	4	15
8	Squash		3	1	9.9
9	Volley ball		1	1	10
10	Tennis		1	4	15
11	Tennis		2	1	15
12	Squash		3	2	9.9
13	Volley ball		1	2	10

4. Right Justify the column headings in columns B through to E
5. Label cell A14 as **Day's Total** and format the A14:E14 to have a border line above and below.
6. Format the Row 2 to use "Alignment | Wrap Text"
7. Save your worksheet as **'Atele Gymnasium**
8. Print your worksheet

Exercise 4b

9. Insert three rows at the top of the worksheet. Format columns D and E to style Currency with two decimal places.
10. Enter a heading at the top of the worksheet
    - 'Atele Health and Fitness Facilities
    - Court Bookings Details
    - Monday, 3 June 1998
11. The hourly rate for tennis increased from $18.00 as from 1st of June. Alter the worksheet accordingly

12. Two bookings were left out by mistake. Add these extra bookings into the spreadsheet

    - Tennis, Court 4, 3 hours
    - Racquet ball, Court 1, 1 hour

13. Management wishes to include more specific information on the time of day of the booking. Insert two columns at E and enter right justified label headings:

    - Time AM in column E
    - Time PM in column F

14. After an injury in the first five minutes of play the squash booking on Court 4 was cancelled. Delete the row of the 1 hour squash booking on Court 4 from the worksheet as no fee was charged.

15. Save and print the new worksheet.

Exercise 4c

16. Calculate the amount received per booking by entering the formula for the appropriate row in column G.

    - Hours Booked x Hourly Rate = Amount

17. In G20 enter a formula to calculate the greatest amount received from the bookings. Enter a Right Justified Label in H20

18. The management wants to be able to calculate from the booking revenues whether the facilities are making money or not. Enter the details of the Expenses in the cells shown below

    - A22: Day's Revenue
    - A23: Less
    - A24: Day's Expenses
    - A25: Desk Manager's Salary
    - A26: Electricity, water, etc.
    - A28: Total Profit/Loss
    - F25: 250
    - F26: 100
    - G22: (enter a formula to total the Day's Total)

19. Total the expenses using a formula into G27

20. Subtract Expenses from Revenue to obtain the profit or loss for the day. Enter the formula in G28

21. Save and print the modified spreadsheet.

22. All bookings, except for the last two, were in the morning. Business in the complex is slow on Monday afternoons. A local high school wishes to book the complex from 1 to 4 pm on Monday afternoons paying $5.00 per student, with a minimum of 50 students attending. Would the gym make a profit if it were to take this regular booking?

    - How did you calculate your answer?

23. Tomorrow you will enter information in a spreadsheet for 4 June 1998. Only the booking details will change, the headings will remain the same. What suggestions can you make to speed up the task of entering daily booking details?

Exercise 4d

24. Produce a bar graph to compare the hourly rate charged for each game.

- Title: 'Atele Health & Fitness Facilities
- Category Axis: Games
- Value Axis: Price

25. Interpret the graph by describing what the graph reveals about court charges.

Unit 5

Doc Gum

Exercise 5a

Doctor Gum conducts a small dental practice in Randwick, New South Wales. He uses an electronic spreadsheet to record account payment details of his dental patients.

1. Enter the information below in your worksheet for 21 October 199-.

   - A. Set the following column widths
     Column A — 14
     Column B — 19
     Column C — 15
     Column D — 9
   - B. Enter the client receipt details for 21 October 199– in your worksheet

	A	B	C	D
1		Client Receipts 21 December 199-		
2				
3	Receipt No	Patient Name	Payment Method	Amount
4	1130	Mr. John Smith	Cheque	260.9
5	1131	Miss Sarah Jones	Cash	23.4
6	1132	Miss Kim Tong	Cash	109.86
7	1133	Mr Mario Padrous	Bankcard	93.5
8	1134	Ms Jacqui Meski	Cheque	24.3
9	1135	Miss Lisa Gabore	Cheque	24.3
10	1136	Mr Toni Ski	Bankcard	10
11	1137	Mr Alan Crisp	Cash	45
12				
13				
14				

   - C. Centre the receipt numbers in column A.
   - D. Right justify the label headings in columns A to D

2. Save the worksheet to your data disk, call your worksheet Dr. Gum

3. Print the worksheet.

Exercise 5b

4. Centre all label headings over columns.

5. Format column D to currency with two decimal places

6. Mr Padrous' name is spelt Padrolous. Edit the cell and correct the spelling.

7. Mr. Smith's cheque bounced (was not accepted at the bank), remove his payment details from the worksheet (delete the row such that the rest of the rows are moved up and no blank row exists)

8. Insert in Column B a new column with the centred label heading **Item No.** Dr. Gum will use this to include a summary of what each patient received in the consultation. Enter at the bottom of the worksheet in column A the 'legend' below:

   Legend
   - 1 = filling
   - 2 = tooth removed
   - 3 = scaling
   - 4 = cap
   - 5 = braces

9. Key in the item numbers for each patient on 21 December 199-

   - Miss Jones — 2
   - Mr Padrolous — 4
   - Mr Ski — 1,3
   - Mis Tonga —3
   - Ms Meski — 5
   - Mr Crisp — 1
   - Miss Gabore — 1, 3

10. Centre the items in column B

11. Recentre the main heading over the worksheet

12 Save the amended worksheet.

Exercise 5c

13. Enter the label **Total Receipts** in cell A13.

14. Format E13 to have a line above and under the cell.

15. Total the payments received by Dr. Gum for the day by using a formula in E13

16. Mr. Smith came into the surgery and paid cash for his bill of $260.90. The new receipt number is 1138. The item numbers are 1 and 2. Include Mr. Smith's payment detail in row 11.

17. Verify that your formula has included Mr. Smith's payment

18. Dr. Gum requires the payment method included in the worksheet for record purposes, but does not want it displayed. Hide column D – Payment Method

19. Save the amended worksheet.

Exercise 5d

20. Dr. Gum wishes you to prepare as a pie chart the toal receipts per month for the first quarter of 199-. The receipts for each month were:

    - January $1,099
    - February $16,789
    - March $12,455
    - April $25,000
    - (a) Graph Title: Total Recipts

21. Save the graph as a new sheet

22. Save the amended worksheet.

Spreadsheet Review Exercise

January 4, 1999

Save changes as instructed. Student Name: .....

This exercise is taken from a sample Common Assessment Task for Spreadsheets, 1998 by David Whyte.

Interest Payments on Borrowed Money

Sione wishes to borrow money from a bank to buy a car. To do this, he needs to borrow $5,000.00. Sione has visited three banks and they have given him the following information.

Amount to Borrow:
$5,000.00

	Bank One	Bank Two	Bank Three
Interest Rate	9.75%	9.00%	8.50%

	Activity	Criteria	Mark
	Section 1		
1.	Create a spreadsheet with the information that Sione has found out. Make sure you include all the labels and numbers *Sione needs to know how much interest he will pay at the end of one year. This is found using the relation:-* Interest Accrued = Amount Borrowed x Interest Rate	5.4.1	2
2.	Insert a **formula** in the column under Bank One, that will calculate the interest accrued.	5.3.3	2
	• It must include an absolute reference to the $5,000.00 entered in your		1
3.	Copy the formula to the next 2 cells to calculate the interest accrued for the other two banks.	5.3.4	1
4.	Enter a label for the row with the interest accrued.	5.3.1	1
5.	Format the numbers in the spreadsheet as shown below:	5.4.4	
	• Percent for the Interest Rate		1
	• Comma Style with 2 decimal places for the calculated Interest Accrued.		1
	• Currency with 2 decimal places for the $5,000.00 loan amount		
	Section 2		
6.	Sione intends to keep the money for one year and then pay it back as one payment. Sione needs to know the TOTAL amount he must pay at the end of the year to clear the debt. The TOTAL amount to be paid back is the Accrued Interest plus the Borrowed Money.	5.3.3	
	• Label the next blank row for showing the TOTAL amount to be paid back.		1
	• Enter the formula that calculates the TOTAL amount for each bank. *It must include an absolute reference to the $5,000.00 in your spreadsheet*		3

Activity	Criteria	Mark
7. Sione wants to know if he can afford the loan. Sione knows he can save $105.00 a week, **but no more**.	5.4.3	
• Leave a blank row after the TOTALs and Label the next row "**Needed Savings**".		1
• In this row calculate what Sione needs to save every week to pay off the loan as one payment at the end of the year.		3
8. Can Sione afford the Loan? Write your response below, referring in your answer to all three banks	5.4.3	3
9. Save the spreadsheet file onto your examination disk as "*Loans and Payments*"		1
SECTION 3		
10. Sione did not realise, know, that the bank charges $25.00 for an application fee for a loan. This means Sione must borrow $5025.00.	5.4.5	
• Make the appropriate change to your spreadsheet.		
11. Save the spreadsheet as a different file, use the file name "*Loans Bigger*"		1
12. Can Sione afford the Loan? Write your response below, referring in your answer to all three banks	5.4.3	3
SECTION 4		
13. If interest rates increase by 0.25% (a quarter of a percent) what happens to the amount Sione must save each week to pay off the loan?		
• Do a suitable "*what if*" on your spreadsheet by making the changes to the	5.4.6	3
14. Save the changes to a file called "*Loans Interest*"		1
Do not make markings below. For completion by course teacher.		
Sub-total		**/ 32**

Sources and References:

David Whyte, Spreadsheet Common Assessment Task 1998

http://www.qsc.edu.to - Queen Salote's SchoolNET Website
http://www.tongatapu.net.to - **Tonga** on the **'NET**

http://www.qsc.edu.to is available on all networked computers at Queen Salote College.

Spreadsheet Review Exercise

January 4, 1999

Save changes as instructed. Student Name: .....

This exercise is adapted from a sample Spreadsheet exercises by Tonga Siliva

Calculating that Breakfast Calorie

As the computer whiz at home, and not too dumb when it comes to Mathematics, you have been given the duty of checking how healthy (at least how many calories) the diet or eating habits of the family's two young ones.

Below is a partially completed table which represents the number of calories eaten by Baby Bill and Baby Mele.

	A	B	C	D	E
1			**Calories**		
2	Breakfast	Muesli	Fruit	Yoghurt	Total
3					
4	Mele				
5	Bill				
6					
7	Average	=((B4+B5)/2			
8					

Activity	Criteria	Mark

Section 1 – Theory

1. Write a formula to be entered in cell E5 to calculate Bill's Total Calories. 1

2. Write down a formula to be entered in cell C7 which calculates the average fruit used. 1

3. Complete cells D7 and E7 using both formulas and a function so that each represents the average of the column they are in. 1
   1
   1

Activity	Criteria	Mark

Section 2 – Practical

4. Enter the above data and formulas into your spreadsheet along with the formulae you — 1

5. Save the spreadsheet file onto your examination disk as "*Breakfast*" — 1

6. Enter the following data, to update the spreadsheet.

   B4 : 250 C4: 100 B5: 250 D5: 104 — 1

Section 3 – Visual Review

1. Which food did Mary not use? (explain) — 1

2. Who consumed the most calories? (explain) — 1

Do not make markings below. For completion by course teacher.

Sub-total **/ 11**

Sources and References:

Tonga Siliva, Spreadsheet Exercises for Form 5 1997

http://www.qsc.edu.to - Queen Salote's SchoolNET Website
http://www.tongatapu.net.to - **Tonga** on the **'NET**

http://www.qsc.edu.to is available on all networked computers at Queen Salote College.

January 4, 1999

Spreadsheet Review Exercise

January 4, 1999

Save changes as instructed. Student Name: .....

This exercise is adapted from Introductory Spreadsheet Exercises by Denise Pavic

Pasta

The Perfect Pasta Factory manufactures pasta for distribution to Italian restaurants in Australia and New Zealand. You are now working for the company and have been given a spreadsheet of their product sales to prepare a presentation and analysis.

	A	B	C	D	E	F	G	H	I
1	Pasta	July	August	September	October	November	December	Total Product Sales	Average
2									
3	Tortellini	34567	45671	89650	67222	56113	96282		
4	Spaghetti	100000	97600	82199	105999	140663	190654		
5	Cannelloni	96543	97600	82199	105999	140663	190654		
6	Lasagne	103456	97645	82297	105669	140220	175000		
7	Ravioli	65000	97600	82199	105999	140663	190654		
8	Fettuccine	76899	85400	96709	101324	140882	181230		
9	Spirali	98000	97600	82199	105999	140663	190654		
10	Macaroni	25000	19654	15222	8000	5602	2003		
11	Gnocchi	86777	75432	84366	105999	55678	201345		
12									
13									
14	Total Monthly Sales								
15									

Section 1 – Formatting

1. Open the file called “Pasta Reviews” from the location specified: 1

2. Set the column widths as specified below:
   - Column A – 13 1
   - Column B to E – 12 1

3. Centre the headings in columns B to G 1

4. Right Justify the labels in column A 1

5. Insert a row in row 3. Type the right justified headings.
   - A14 : Total Monthly Sales 1
   - H2 : Total Product 1

6. Save your worksheet in your folder as “Pasta Analysis” 1

7. Format columns B to H to currency with two decimal places. 1

8. Centre a new main heading in rows 1 and 2 (insert new lines for it) 1

   The Perfect Pasta Factory
   July-December 1997 Sales Figures

Activity	Criteria	Mark

Section 2 – Editing

9. The sales of Lasagne for October have been entered incorrectly, and should $115,669. Update the information in the spreadsheet. 1

10. Move the Ravioli information (the complete row) to the beginning of the list (above Tortellini.) 1

11. Delete the blank row after Gnocci. 1
    Delete the blank row below the Column Titles (before the Pasta names and numbers)

12. Write a formula in column H to calculate the Total sales for that row. 1

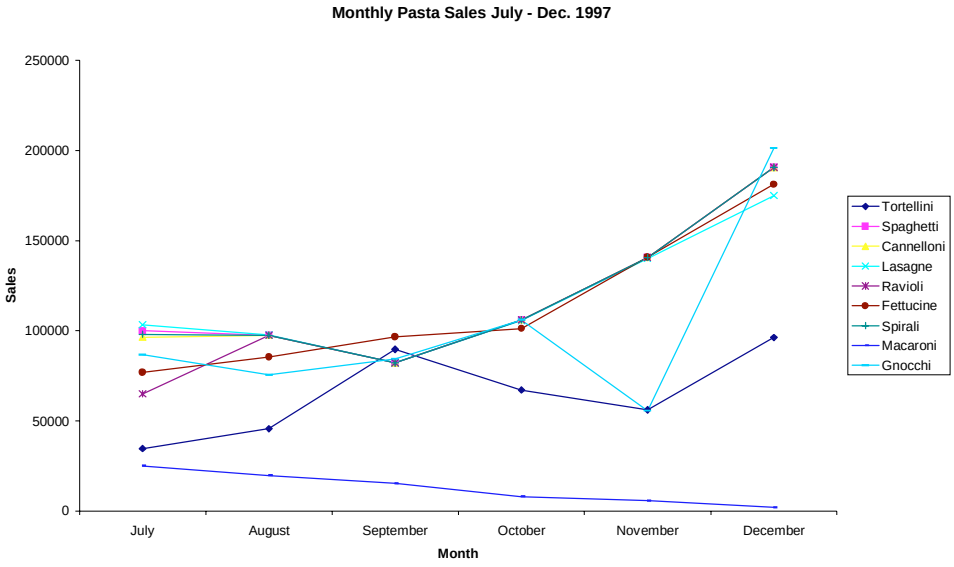
13. Copy the formula down the column to calculate the Total Sales for all PASTA 1

14. Write a formula in the July Column to calculate the Total Sales for the Month of July. 1

15. Copy the formula across the row to calculate the Totals for the Month for all Months. 1

16. Calculate the Average Sales Monthly Sales for each product in Column I 1

17. Format Column H, I to Currency with 2 decimal places 1



Section 3 – Charting

18. Create a new chart with the following information.

- Chart Area: The Pasta Sales and Column Title *(do not include the calculations we have done.)* 1
- Chart Type: As in diagram 1
- Chart Title: Monthly Pasta Sales July-Dec. 1997 1
- Category (X) Axis: Month 1
- Value (Y) Axis: Sales 1
- Legend: Right 1

19. Save Changes 1

Do not make markings below. For completion by course teacher.

Sub-total **/ 28**

Spreadsheet Review Exercise

January 4, 1999

Save changes as instructed. Student Name: .....

This exercise is adapted from Introductory Spreadsheet Exercises by Denise Pavic

Survey Results

As assistant to the Managing Director you have been given the task of obtaining statistics on the ages of people employed by the company. These are for analysis by the Board of Directors. You have conducted a survey and put together the statistics below for entry into a spreadsheet and eventual display as a graph.

	Activity	Mark

Section 1 – Formatting

1. Set the column widths below:
   - Column A — 20 — 1
   - Column B, C, and D — 10 — 1

2. Center all label headings. — 1

3. Enter in the worksheet the number people employed in each occupation — 1

	A	B	C	D	E	F
1	**Anderson Australia Ltd**					
2	**Age Comparison Survey**					
3						
4						
5	Area	15 to 18	19 to 24	25 to 29	40+	
6						
7	Managerial	0	0	5	25	
8	Sales	32	50	100	42	
9	Clerical	4	13	35	19	
10	Communications	2	23	31	1	
11	Marketing	10	3	24	5	
12	Computing	6	19	52	1	
13	Art & Design	1	14	30	21	
14	Accounts	2	17	59	23	
15	Research	0	0	22	28	
16	Other	16	95	108	56	
17						
18	Total					

4. Save the workbook as **Survey – 1** — 1

Section 2 – Editing

5. Move the *Marketing* row and place it between *Sales* and *Clerical* — 1

6. Change (amend) the number of people employed in the *Clerical* area aged 19 to 24, make it 33 — 1

7. *Advertising* (another department) was left out of the spreadsheet by mistake. Enter the following statistics in a new row between *Accounts* and *Research*. — 1
   - 15 to 18 19 to 24 25 to 39 40+ — 1

8. Save the file as **Survey – 2** 1

Section 3 – Formulas

9. Using formulas, total the number of people in each age group into the row Total 1

10. Label column F to place the totals of each department 1

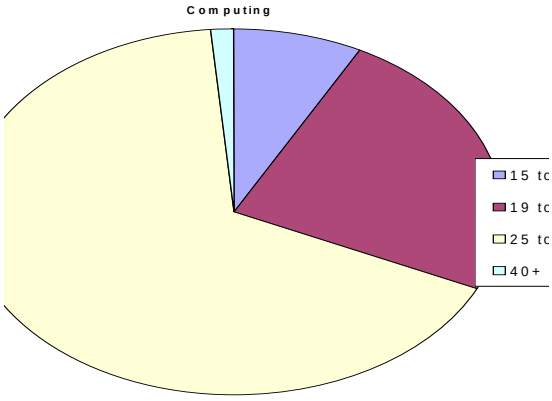
11. Using formulas, total the number of people in each department into the column Total, labeled in 1

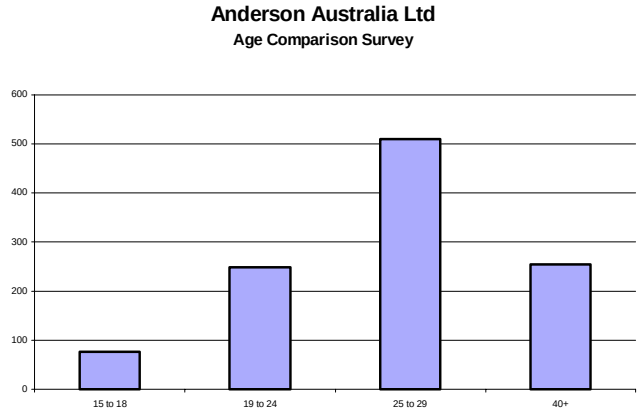
12. Save the file as **Survey – 3** 1

Section 4 – Charting, Graphing

13. Prepare a pie graph to compare the number of people employed in each age group I the *Computing* area. 1
    - Use an appropriate heading for the chart 1
    - Show a legend 1
    - Create the chart in a new sheet named 'Computing'

14. Prepare a bar graph to compare the **total** number of people employed in each age group. 1
    - Heading: Anderson Australia Ltd 1
      Age Comparison Survey 1
    - No Legend 1
    - Save the chart as a new sheet **Total**





15. Save the file as **Survey – 3** 1

Do not make markings below. For completion by course teacher.

Sub-total **/ 25**

Spreadsheet Review Exercise

www.tongatapu.net.to

January 4, 1999

Save answers to all changes to the document on the disk given to you.

This exercise is taken from the PSSC 1998 Spreadsheet Common Assessment Task

1. Turn on your computer and start your spreadsheet program. 2
   - Use your spreadsheet program to **enter** the spreadsheet exactly as it appears on the following page. 1

2. Apply the **Annual Growth Rates** for each division to the 1997 figures to get the projected sales for 1998 through 2000.
   - Create formulas to calculate the values in the 1998 column then **copy** them to the remaining columns. *(For this exercise you **must** use **absolute** cell addresses for both row and column for growth rates.)* 1 1
   - Format the values with **no decimal places.** 1

3. Create a simple **bar or column chart** (graph) 1
   - showing all four divisions for each of the four years, i.e. group the divisions by years.
   - Be sure that your chart includes a **legend.** 1
   - The **title** of the chart must contain the name of your company. 1

4. Create a **Total** column after the 2000 column, 1
   - centre the heading "Total" and double underline it. 1
   - Use a formula to calculate the total of the years 1997 through 2000 for one cell and then 1
   - copy the formula to the remaining cells.
   - Format the values with **no decimal places.** 1

5. **Sort** the rows in **descending** order of values in the Total column. 2

6. Add three rows to the bottom of the table with the headings of: **Average, Maximum, and Minimum** 1
   - Use **formulas** to calculate the values of each year and for the Total column.
   - Average 1
   - Maximum 1
   - Minimum 1

7. Change the **format** of the numbers in the table to **currency** with **no decimal places.**

8. **Adjust** the widths of the columns so the values fit exactly in the columns. 1

9. Print the spreadsheet 1

10. Perform a what-if analysis by changing the Annual Growth Rate for Plastics to 20% 1

11. Save the spreadsheet on your disk by using the following naming conventions. 1

Note: Write this filename (in pen) at the top of each page of the printed spreadsheets and the

Do not make markings below. For completion by course teacher.

Sub-total /31

[Your Name] Company

Division Sales

Annual Growth Rates:	Rubber	5%
	Steel	3%
	Plastics	4%
	Food	8%

Division	1997	1998	1999	2000
Rubber	45000			
Steel	28600			
Plastics	38200			
Food	23400			

Sources and References:

PSSC Computer Studies CAT 3 – Spreadsheet Task 1998

http://www.qsc.edu.to - Queen Salote's SchoolNET Website
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January 4, 1999

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Spreadsheets Exercise

January 4, 1999

Student Activity Booklet, Student Mark Booklet

Instruction to Candidates: Candidate Name: .....

- Answer all questions in Blue or Black Pen. Use of any other coloured pen, or use of pencil will not be marked.
- Make Sure your name is put on the Section One, and Section Two paper.
- If assistance is required to solve a problem, students will be penalised assistance marks.
- Clarifications of questions are not penalised.
- Candidates are **not** permitted to communicate with each other at any time during the examination, including the print-out time.

Section One Total	23	
Section Two Total	36	

Description of the Booklet

This booklet serves as both the Activity Booklet you will use during the Common Assessment Task and as the Student Mark Booklet which is used to record your mark. Make all necessary markings on this booklet and it must be collected together with any other paper work at the completion of the examination.

This Common Assessment Task is composed of two components

Section One – A question and answer
Section Two – A practical examination requiring the use of a computer

Section One *Marks: 23*
Time Allowed: 30 minutes

Will be collected before Section Two is to begin.

Section Two *Marks: 36*
Time Allowed: 30 minutes

Answers are to be saved to the document on the disk provided.

Printing time is separate to the time allocated for thepractical examination. Teachers may allocate a separate time for printing if problems exist with allocating time on the printers for printing, although the printing must be completed within twenty-four hours of the alloted examination time.

You are not allowed to communicate with other students at this or any other time during the examination process.

You are required to hand in the diskette and booklet at the completion of the assessment exercise.

http://www.tongatapu.net.to/compstud/ - Computer Studies Course Notes
http://www.tongatapu.net.to - **Tonga** on the **'NET**

http://www.tongatapu.net.to is available on all networked computers at Queen Salote College.

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Section One

Candidate Name: ..... School: .....

Q1. Explain the meaning and use of the following spreadsheet terms. (8 marks)

(a) Column _____

_____

_____

(b) row _____

_____

_____

(c)formula _____

_____

_____

(d) absolute reference _____

_____

_____

Q2. Name and give examples of three number formats you can use to format cells in a spreadsheet. (6 marks)

(a) Name: _____ *(b)* Name: _____ *(c)* Name: _____

Example:_____ Example:_____ Example:_____

Question 3 through Question 11. You have been given a spreadsheet with the below displayed information. Using this spreadsheet as a reference answer the following questions in the space provided.

	J	K	L	M	N
45		75			
46	101	411		615	
47	256	210	172		
48			14		
49		32			
50					

Q3. In the space provided, write a formula using cell references to add 172 and 14.

_____ (1 mark)

Q4. Write a formula using cell references to multiply the 32 with 615.

_____ (1 mark)

Q5. Write a formula using cell references to add the 256 to the 14 and then subtract the 411.

_____ (1 mark)

Q6. If cell L50 has the formula M46+L47 in it, write down what the spreadsheet will display in cell L50.

_____ (1 mark)

Q7. If cell L50 is copied to J48, write down the formula in cell J48 after the copy.

_____ (1 mark)

Q8. For the copy operation in Q7., write down what is displayed in cell J48. (1 mark)

_____ (1 mark)

Q9. If instead of the formula M46 + L47 being used in cell L50 we were to use absolute references, write down what the formula would be.

_____ (1 mark)

Q10. Using absolute references in cell L50, write down the formula in cell J48 if the cell L50 were to be copied to J48.

_____ (1 mark)

Q11. After question 10, write down what is displayed in cell J48 (1 mark)

_____ (1 mark)

Section One Total **/ 23**

Section Two

Candidate Name: ..... School: .....

Save answers to all changes to the document on the disk given to you.

You are required to hand in the diskette and booklet at the completion of the assessment exercise. You may ask questions and penalties are applied to questions requiring assistance with the manipulation of the word-processing exercise.

A computer company in town used the template shown below to analyze their CPU sales to some of

	A	B	C	D	E
1	Discount %			Customer	
2					
3	Item Name	Price	Quantity	Discount	Sub-Total
4	PENTIUM–166				
5	PENTIUM-200				
6	PENTIUM-233				
7	PENTIUM II–300				
8	Totals/Averages				

	Activity	Criteria	Mark
1.	Key in the above template into a new worksheet	5.4.1	2
2.	Insert your FULL NAME in cell E1		1
3.	Insert the name of your school in cell E2		1
4.	Save it as **SALES1.C2**		1
	Formatting Spreadsheet Data	5.4.4	
5.	For the labels in row 3, you are to centre and bold them		2
6.	Increase the font point size of the contents of cells D1 and E1 12 points		2
7.	Adjust the widths of each column so that ALL labels can be seen on the screen (use		1
8.	Format cell B1 to PERCENT with TWO decimal places		2
9.	Format the following cells, B4:B7, D4:D7, E4:E7, B8, D8, and E8 to CURRENCY with two		2
10.	Save this file as **SALES2.C2**		1
11.	Enter the following values into the appropriate cells	5.4.2	3

Cell	Content
B4	250
B5	290
B6	365
B7	700
B1	15%

Cell	Content
C4	3
C5	16
C6	37
C7	6

12. Save this file as **SALES3.C2** 1

Activity	Criteria	Mark
Create formulas to calculate desired information	**5.4.3**	
13. Insert in the appropriate cell a formula that will calculate the DISCOUNT amount, for the PENTIUM-166, which can be determined by multiplying its unit PRICE by the QUANTITY sold		3
14. The SUB-TOTAL for the PENTIUM II-300s can be calculated by multiplying its unit PRICE and the NUMBER SOLD and then deducting from this total the DISCOUNT allowed. Key in a		2
15. Update cells D5, D6 and D7 relative to cell D4. Also update cells E4, E5, and E6 relative to		2
16. In cell C8 key in a formula that will calculate the AVERAGE number of CPU s sold		1
17. In the space below, explain how one can determine the MOST EXPENSIVE item. You must		
Formula: _____		1
Cell: _____		1
18. Update your worksheet using the above information.		1
19. In cell E8, insert a formula that will calculate the TOTAL DUE, which is the total amount owed		1
20. Save this file as **SALES4.C2**		1
What-If-Analysis	5.4.6	
The management was very happy with this huge sale, and has therefore decided to increase		
21. Make appropriate changes to your worksheet to reflect this change.		1
22. In the space given below, briefly discuss the relationship between cells B1 and E8		1

Explanation:

_____
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_____
__

23. Save this file as **SALES5.C2**		1
24. Print out the file named **SALES5.C2**		1

Do not make markings below. For completion by course teacher.

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