

FACTFILE: GCSE DIGITAL TECHNOLOGY



Unit 1

SPREADSHEET APPLICATIONS 1



Introduction

Learning Outcomes

Students should be able to:

- Describe the following basic structures of spreadsheet software: cells, rows and columns
- Describe and use the following features of spreadsheet software
 - Data types
 - Conditional formatting and validation, templates, importing data
 - Entering text, numbers and formulae
 - Formatting cells, rows and columns
 - Creating and replicating formulae
 - Creating a simple template for others to use and
 - Use simple functions, relative and absolute cell referencing, IF statements, VLOOKUPS

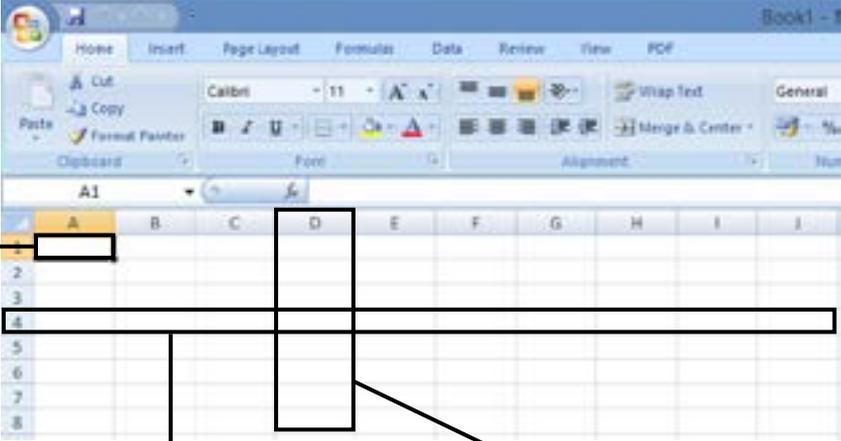
Content in Representing Data

- Basic structures of spreadsheets
- Conditional formatting
- Validation
- Formulae
- Functions

What is a spreadsheet?

A spreadsheet is an application often used to process and display financial or statistical information. It is used by people in many different occupations such as engineers, scientists, teachers, designers and people who run their own business.

Parts of a Spreadsheet



Cell: A spreadsheet is made up of cells. Each cell is given a name called a cell reference which is the letter and the number in that order e.g. B1, C5

Row: A row is a horizontal group of cells named after a letter e.g. 1, 2, 3

Column: A column is a vertical group of cells named after a letter e.g. A, B, C etc

Features of a spreadsheet

Data types

Many different types of data can be entered into a spreadsheet

Labels (Text)	A piece of text used to identify the contents of row or column.	Name Age
Values (Number)	These must be entered in to allow for calculations to be carried out	5 23
Formula	A formula is an instruction to carry out a calculation	=A1+B1

Formula

A formula is a way a calculation is represented in a cell, using mathematical operators and references to other cells. The formula is entered into a cell, but the display shows the current result of the calculation, which may change as the values in other cells change. All formulae start with an equals sign.

Simple formulas:

=A1+B1	Will add the contents of these two cells together
=D1-C1	Will subtract the contents of C1 from D1
=A2*B2	Will multiply the contents of A2 and B2 together
=A3/A4	Will divide the contents of A3 by the contents of A4

Functions:

A function is used to do a very specific job within a spreadsheet.

AUTOSUM	=SUM(A1:A10)	The autosum formula will add a range of cells. A1 is the first cell in the range and A10 is the last cell in the range. This formula will add A1 through to A10 together									
AVERAGE	=AVERAGE(A1:A10)	The average function will find the average of a range of cells									
MAX	=MAX(A1:A10)	The max function will find the highest value in this range of cells									
MIN	=MIN(A1:A10)	The min function will find the lowest value in this range of cells.									
IF	=IF(A1>60,"PASS","FAIL")	If the contents of cell A1 is greater than 60 then the word PASS will be entered, if it lower than 60, the word FAIL will be entered.									
VLOOKUP	<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>BLUE</td> <td>20.0</td> </tr> <tr> <td>2</td> <td>PINK</td> <td>1.0</td> </tr> </tbody> </table> <p>The formula looks like this =VLOOKUP("BLUE", A1:B2, 2) and the answer it returns is 20.0</p>		A	B	1	BLUE	20.0	2	PINK	1.0	Short for Vertical Lookup. This allows you to look up a value in a range of cells in a column and display that value.
	A	B									
1	BLUE	20.0									
2	PINK	1.0									

Replicating formula

Replication is the process of copying a formula from one cell to another.

	A	B	C
1	€	Rate	£
2	1	0.69	=A2*\$B\$2
3	5		=A3*\$B\$2
4	10		=A4*\$B\$2
5	15		=A5*\$B\$2
6	20		=A6*\$B\$2

Relative cell reference

A relative cell reference is cell reference in a formula that changes depending on its location on a worksheet. For example, if a formula is copied from one cell to another the cell reference in the formula will change.

Absolute cell referencing

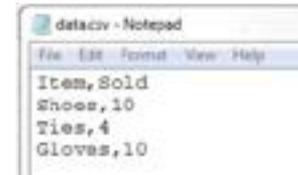
This is when you want a cell reference in a formula to always stay the same. A dollar sign (\$) is used to tell the spreadsheet software to always use that particular cell. In the example above, cell B2 is the cell to be used in all formula. Therefore a dollar sign has entered in front of the letter B and the row number 2 to ensure that cell is always used in the formula even when replicated.

Using spreadsheet software

Importing Data

Typing small amounts of data into a spreadsheet is fine but if there are hundreds or even thousands of lines of data, this would be very time consuming.

Data can be imported using a data file called a CSV file. CSV stands for comma separated value. In this file, each item is separated by a comma and looks something like this:

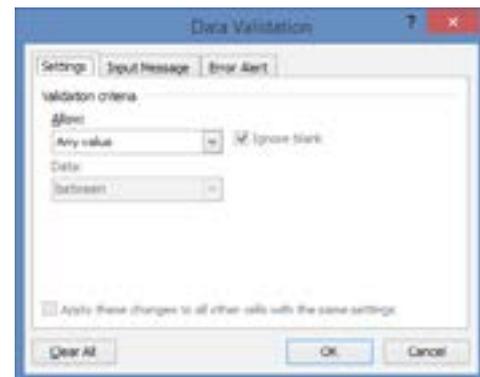


Each comma indicates a new column and each line indicates a new row. If the above csv file were imported, it would look like this in the spreadsheet software:

	A	B
1	Item	Sold
2	Shoes	10
3	Ties	4
4	Gloves	10

Data Validation

Data validation is used to ensure that data entered by the user is reasonable and sensible. Data validation can be used in a number of ways such as ensuring that data entered is within a particular range, that data is in a particular format or that only certain items in a list can be selected. Data Validation can be found under the 'Data' tab in the spreadsheet.



Examples of Data Validation:

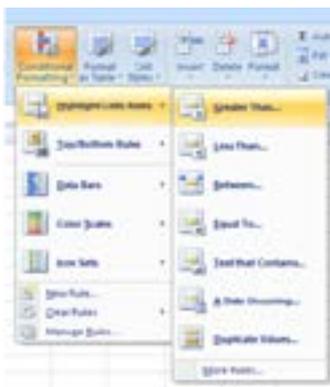
- Age must be a whole number which is less than 18
- Exam Result must be between 0 and 100
- Gender must be from a list which consists of Male and Female

Conditional Formatting

Conditional formatting is used to change the appearance or the formatting of a cell when certain conditions are met. Imagine that a teacher used a spreadsheet to record students exam results and they want to identify everyone who has got over the pass rate of 60 in green and everyone who got under 60 in red.

56
67
87
45
67
78
99
66

On the tool bar select Conditional Formatting under the 'Home' tab.



Select 'Highlight Cell Rules' and then 'Greater than'. In the Do the same again to format all the cells that contain a value hich is less than 60.



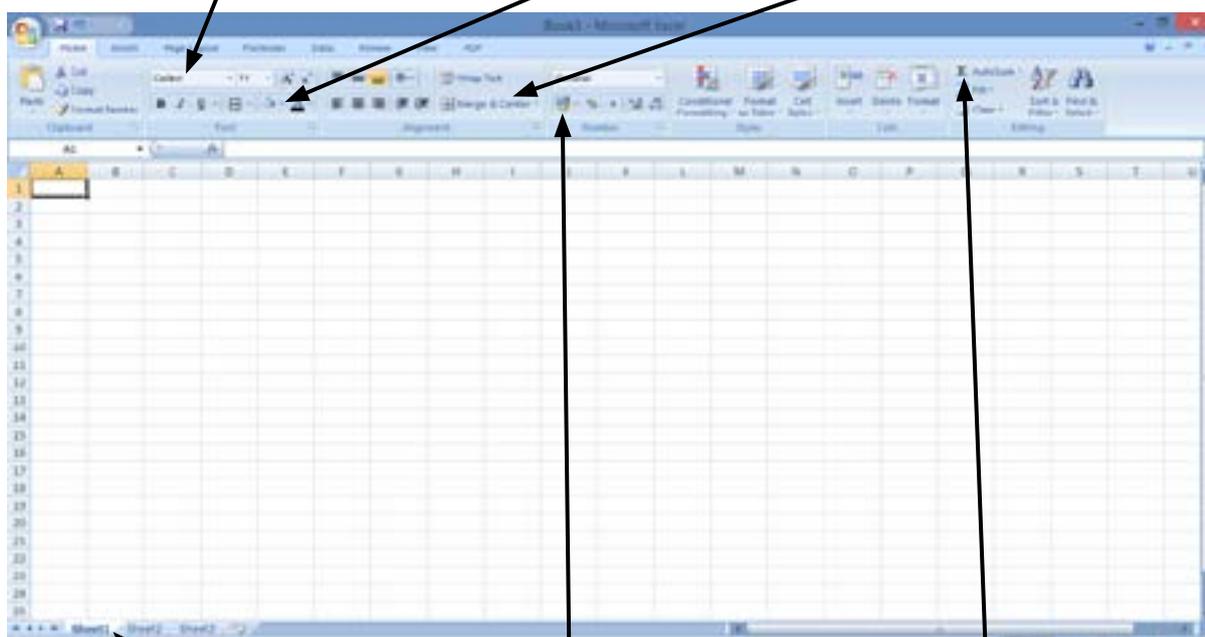
Formatting a spreadsheet

Some key formatting features available in spreadsheet software are set out below.

Font: You can change the font type, size and style (Bold, italic, Underline)

Cells: You can change the background colour of cells and add a border

Merge & Centre: This title is merged and centred



Sheet tabs: You can rename, insert and move sheet tabs

Currency: Format the appropriate cells to currency

SUM: Use the Autosum function to calculate the totals for each column



Task: Creating and formatting a spreadsheet

Actors Associates is an acting agency that uses a spreadsheet to work out the commission and actual commission for the actors on their books.

Create a spreadsheet similar to the one set out below:

	A	B	C	D	E	F	G	H
1	Actors Associates							
2								
3								
4	Contact Surname	Contact Firstname	Daily Rate	Duration	Gross Income	Actor Fee	Commision (5%)	Actual Commision
5	Kurl	Rip	€50.00	7				
6	Stein	Ricci	€100.00	17				
7	Jones	Christina	€125.00	7				
8	Smythe	Leonardo	€50.00	14				
9	Locklear	Brian	€75.00	7				
10	Anderson	Heather	€100.00	14				
11	Jones	Alexis	€75.00	14				
12	Zettling	Igor	€100.00	14				
13	Walker	DiLoy	€75.00	14				
14			Totals	108				
15								
16	Over €1000 (%)		10					
17	Less than €1000 (%)		5					
18								

1. Merge & Centre the title.
2. Format the titles so they stand out.
3. Insert your name and class in a header.
4. Use data validation to ensure that only the numbers 1 to 20 can be entered for duration.
5. Use conditional formatting to identify all the actors hose daily rate is £100 or more.
6. Work out the gross income for Rip Kurl. Replicate this for all other actors.
7. Work out the commission for Rip Kurl. The commission is 5% of the gross income. Replicate this for all other actors.
8. If the gross income is over £1000, the actual commission is 10%, if it is under £1000, the actual commissions is 5%. Use appropriate formula to work the actual commission out for Rip Kurl. Replicate this for all other actors.
9. Enter an appropriate formula in F5 to work out the Actor Fee. The actor fee is worked out by taking the actual commission away from the actor fee. Replicate this for all other actors.
10. Use an appropriate function to work out the totals for all columns.
11. Make sure all monetary values are formatted to currency.

Bibliography

http://www.teach-ict.com/gcse_new/spreadsheets/spreadsheets/home_spreadsheets.htm

