Year 8 - Half-Term 3 – Spreadsheets & Complex Functions – Knowledge Organiser

Lesson 1: Spreadsheets

Spreadsheet: a computer program that represents information in a two-dimensional grid of data.

Cell Reference: spreadsheets are made up of individual cells which hold data, each cell has a cell reference. The cell reference begins with the column letter and is then followed by the row number.
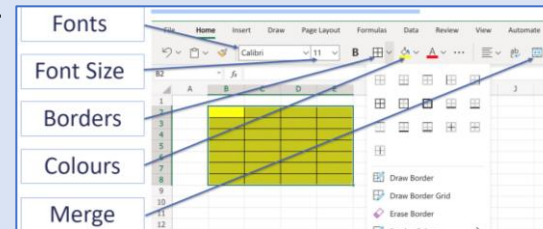
Formula: an equation that makes calculations based on the data in your spreadsheet.

Functions: these enable users to perform mathematical, statistical and logical operations effectively. Functions are used to extract important information quickly, without individuals having to manually read through and process the data. The BIN2DEC function allows users to convert binary numbers into decimal numbers

Lesson 2: Data vs Information

Data is raw facts and figures, whereas **information** is data that has been processed and given context and meaning. For example, the numbers 01101101 are data. We do not know what they mean. Once we know this is an 8-bit binary number, we have context.

Formatting in spreadsheets refers to a way of using targeted styles to signal what type of data is in a cell. Types of Formatting, user can change the: fonts, font sizes, the colours, the borders and can also merge cells.

Lesson 3: Functions

Functions: these enable users to perform mathematical, statistical and logical operations effectively. Functions are used to extract important information quickly, without individuals having to manually read through and process the data.

4 key simple functions: 'MAX', 'MIN', 'AVERAGE', 'SUM'.

3 Complex Functions:

The **'COUNTA'** function is a statistical function that allows users to count the number of cells that contain data and information.

=COUNTA(J3:J14)

The **'COUNTBLANK'** function count the numbers of cells that do not have any data stored.

=COUNTBLANK(J3:J14)

The **'COUNTIF'** function allows users to identify how many cells contain a specific piece of data, for example a word or a number.

=COUNTIF(J3:J14,">Yes")

Lesson 4: Conditional Formatting

Conditional formatting makes it easy to highlight certain values or make particular cells easy to identify. This changes the appearance of a cell range based on a condition (or criteria). You can use conditional formatting to highlight cells that contain values which meet a certain condition. Or you can format a whole cell range and vary the exact format as the value of each cell varies. Conditional formatting can help make patterns and trends in your data more apparent. Conditional formatting is commonly used when analysing numerical information as colours can be used to signify the meaning of the number within each cell.
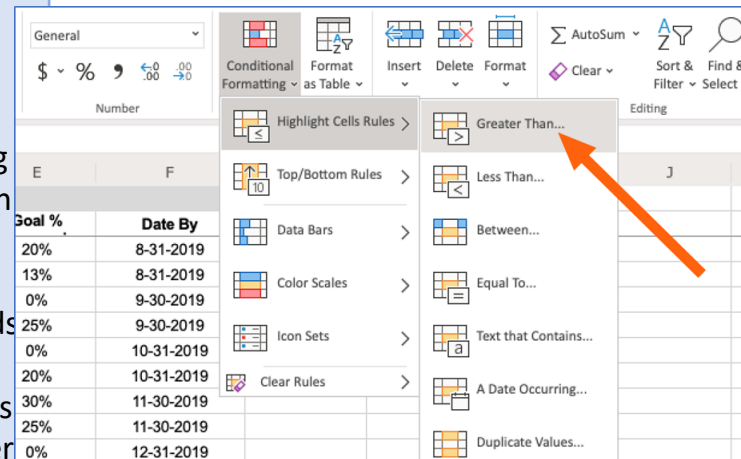
Lesson 5: Reporting Concerns

- In school, you can speak to a trusted staff member about any concerns that you have,
- you can also use the *call it out* platform to make an anonymous submission.
- If you're worried about something that you have experienced online, you can contact the NSPCC helpline for free support and advice, via their website, or you can contact ChildLine at any time
- When online gaming or using social media, you can report any accounts, groups, individuals or posts that have caused you upset or distress.

Year 8 - Half-Term 4 – Python Programming – Knowledge Organiser

Lesson 1: Algorithms & Flowcharts

Algorithm: a plan, a set of step-by-step instructions to resolve a problem.

Flowchart: a visualisation of an algorithm using symbols and arrows

	Terminal	Start / Stop
	Rectangle	Process
	Diamond	Decision / Question
	Parallelogram	Input / Output
	Arrow	Connector

Lesson 2: Syntax & Logic Errors

A **syntax** error occurs when the program has been written incorrectly, for example with incorrect; spellings, upper case letters, punctuation or indents that cause the program to output 'invalid syntax' when it runs.

A **logic** error is a mistake in a program's code that results in incorrect or unexpected behaviour. The program runs, however it does not do what it was intended to, it may simply produce the wrong output.

Lesson 3: Variables

A **variable** is a named memory address that holds a value. Variables usually follows certain rules:

- It can contain letters and numbers but must start with a letter and it must contain at least one letter
- Spaces are not allowed so underscores _ must be used to link more than one word together.
- It should contain lowercase letters. However, uppercase letters can be used if a variable name comprises more than one word joined together.
- The name should be meaningful and it should represent the value it is holding.

Lesson 4: Sequence

A **sequence** is a set of instructions and statements, performed by a computer, one after another

```
1  print ("Hello Year 8")
2  print ("This half term you are learning how to code")
3  print ("You will be using Python via MU Editor")
4  print ("Let's learn together")
```