Subject: Computing	Year: 6 – Spring 2 – **Data & Information – Spreadsheets**

National Curriculum objectives
- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.

National curriculum maths links

Number – addition, subtraction, multiplication, and division:
- Solve problems involving addition, subtraction, multiplication, and division.

Statistics:
- Interpret and construct pie charts and line graphs, and use these to solve problems;
- Calculate and interpret the mean as an average.

Education for a Connected World links

Managing information online
- I can describe how I can search for information within a wide group of technologies (e.g. social media, image sites, video sites);
- I can use different search technologies;
- I can evaluate digital content and can explain how I make choices from search results.

To begin this unit, the children should have already learnt:	The learning in this unit will prepare the children to learn these things in the future:
Year 1 Data can be numbers, words or figures. Objects can be labelled using either their names or by describing their properties. Labels can be used to place objects into groups. This helps us to count and compare data easily – computers help us do this. Year 2 Data can be collected in the form of a tally chart and then progress onto presenting data in the form of pictograms and, finally, block diagrams. The data presented can be used to answer questions. Year 3 Branching databases can help us to identify objects within sets of data and <u>classify</u> the objects into groups, based on what they are or their different attributes. Year 4 Data loggers (which have sensors built into then) and logging software can be used to automatically capture data. We can use data collected draw conclusions in answer to our research questions.	National Curriculum Objectives at KS3: - Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem; - understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits; - understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

Year 5 Flat-file databases organise large amounts of data so that it can be easily added to, amended, stored, and accessed. We can find the data that we need by using the 'search', 'filter' and 'sort' functions.	
Key Enquiry Question How have you structured your table of data and why? Why do you this (data) is formatted in this way? What are the steps to create a formula? What type of data can **not** be used in a formula? When would it be useful to duplicate a formula across multiple cells? How has using a spreadsheet helped you answer questions about the upcoming event? When is it best to a chart rather than a table to present data?	**The Big Idea:** A spreadsheet is a computer application that allows users to organise, analyse and store data in a table and present information in meaningful graphs and charts. Spreadsheets are most used for organising and presenting finances (for example budgets and finance reports) because users can apply formulas and formatting to perform mathematical processes and make data easier to decipher.

To achieve ARE, pupils will need to be secure in the following knowledge:

By the end of this unit, children will know:	**Vocabulary:**
• Questions that can be answered using spreadsheet data; • What an item of data is in a spreadsheet; • The data type determines how a spreadsheet can process the data; • There are different software tools to work with data; • Formulas can be used to produce calculated data; • Recognise cells can be linked; • Why data should be organised in a spreadsheet; • a cell's value automatically updates when the value in a linked cell is changed; • How to evaluate results in comparison to the question.	Information, data, search, label, group, program, similar, properties, different (introduced in Y1). Tally, tally chart, present, problem; attributes (introduced in Y2). Branching; database; multiple; classify; structure; present (introduced in Y3). Sensor; logging; analysis; data logger; software; interpret; conclusion (introduced in Y4). Sort; filter; records (introduced in Y5). **Format, formula, spreadsheet; accounting; tax; business.**

By the end of this unit, children will be able to do:	**Useful Resources:**
• Calculate data using a formula for each operation; • Use functions to create new data; • Use existing cells within a formula; • Choose suitable ways to present spreadsheet data.	Access online training courses via the teachcomputing.org website: • Get Started Teaching Computing in Primary Schools: Preparing to teach 5- to 11-year-olds; • Teaching Computing Systems and Networks to 5- to 11-year-olds; • Teaching Physical Computing to 5- to 11-year-olds; • Teaching Programming to 5- to 11-year-olds. *Microsoft Excel*; *Apple Pages*.

COMPUTING: DATA AND INFORMATION KNOWLEDGE ORGANISER

Overview

Spreadsheets

-Data is raw numbers and figures. Information is what we can understand from analysing data.

-There are lots of different ways that we can collect, log and interpret data, including by using spreadsheets.

-Spreadsheets organise and store data in meaningful ways so that it can be easily accessed and analysed. Computer spreadsheets are particularly useful for powerful calculations, graphs and charts.

What are Spreadsheets?

-A spreadsheet is a computer application that allows users to organise, analyse and store data in a table. Programs such as Microsoft Excel and Google Docs help users to make spreadsheets.

-A spreadsheet can be made up of multiple worksheets. They can be reordered and renamed. Each cell has a unique reference, made up of a number (the row) and letter (the column).

-Data headings allow data to be stored in a meaningful way.

-To select a cell, we click on it. To enter data, we double click on it. Data can be typed directly into a cell or into the formula bar.

-By clicking on a column or row, we can sort information in different ways (e.g. alphabetically, 0-9, etc).

Formulas, Calculating and Duplicating

Formulas: A formula can tell a computer which mathematical operation to use for a calculation: add, multiply, divide, or subtract. It also tells the computer which data to use.

+ = add   - = subtract   * = multiply   / = divide

Select your cell. Use cell references to create your formula.

E.g. In D3, you enter the formula =D1*D2. The answer will appear in D3.

-Calculations: Sometimes there are large amounts of data that require multiple or complex sums. The 'fx' or 'sigma' icons (see below, depending on the program you are using) can help you to find averages (AVERAGE) add many cells together (SUM) and many other calculations.

-Duplicating: Duplicating allows you to create copies of the same data, without having to type it out multiple times. The copy and paste function (Ctrl+C and then Ctrl+V) can duplicate individual cells. You can duplicate whole worksheets by clicking on the worksheet name and selecting 'move or copy' then tick 'create a copy.'

Other Functions

-Formatting makes a spreadsheet easier to read. Hovering the mouse between two columns/ rows allows the user to drag them to the desired size. Right-clicking on a cell and selecting 'format cells' presents a number of options, including fonts, borders, fill etc.

-Charts and graphs can be created using the data in the spreadsheet. Select the charts icon (see below) and which fields to display in the x-axis and y-axis.

Using Spreadsheets

-Spreadsheets are commonly used by individuals and businesses across the world. They are most commonly used for organising and presenting finances, for example budgets and finance reports.

-Spreadsheets may be used by businesses to look back on past income and expenditure and to forecast future performance. They are also used for calculating taxes and deductions.

Important Vocabulary

Information   Data   Spreadsheet   Format   Formula   Accounting   Filter   Software   Tax   Business