Knowledge Organiser: Modelling with spreadsheets

Summary

In this unit, students will learn the basics of spreadsheets. They will learn to add data, understand rows and columns and be able to use simple calculation techniques. Students will learn these skills around a **computer model** which will be a sweet shop**.** Graphs will also be studied in this unit: they will be bar charts, column charts and pie charts. The uses of each will be explained.

Simple models can be built in a spreadsheet. A spreadsheet model could be used to plan a school prom. To make sure it came in on budget the spending on food, drinks, entertainment, and the price of tickets could be varied.

A spreadsheet can be used as a modelling tool. The **model** is controlled by a set of rules introduced by **formulae** and **functions.** These rules can be changed easily to vary the model and, for example, provide information about running costs and profit margins.

Key Vocabulary

Axis labels	A label for a graph's horizontal or vertical axis that explains what the value relates to.
Cell	An individual spreadsheet box where you enter data.
Cell reference	Names of individual cells (A5 for example).
Column	Cells that go down the spreadsheet page.
Computer model	Predicts and investigates how real-life devices or processes might behave in different situations.
Data	Values, typically letters or numbers.
Format	The appearance of a document, including the fonts, colours, size and rotation.
Formula	Makes automatic calculations that update when the data does.
Function	Makes more complex calculations.
Row	Cells that go across the spreadsheet page.
Spreadsheet	A piece of software used to manipulate data, often used in modelling.

Advantages of using spreadsheets

Using a spreadsheet rather than a calculator or pen and paper offers the following advantages:

More effective data handling

Formulae can be used to instantly recalculate totals. For example, if the builder changed his call-out charge, the total cost would be instantly recalculated taking the change into account.

- You can carry out **"what if?" investigations**. For example, the grocer could increase his prices to see the effect on sales and the builder could increase his hourly charge to see the effect on his daily total.
- The information can be presented in different ways. For example, the grocer could produce a **graph** of fruit and vegetable sales by choosing the ranges A2:A8 and E2:E8 in order to make the graph.

♦It is **easy to make these changes**, save your work and print it out again.

More flexible presentation

- Alter **column** widths and easily delete or add columns and **row**s.
- Underline, embolden text and use different fonts and graphics.
- Justify your data to the left, centre or right.
- Control the types of numbers you enter - for example you can choose percentage, currency or set the number of decimal places.

Limitations of computer models

A model is only as good as the rules used to create it. A mistake could have been made by whoever wrote the model and not every situation might have been considered - both of these issues could cause the model to give incorrect answers.

Types of spreadsheet graphs