# KS4 – Spreadsheets

## Unit introduction

In this unit, learners will gain an understanding and knowledge of how to use spreadsheets to store and manipulate data, how to use common functions, and how to extract data to create visual representations using charts. Learners will use spreadsheets to track and calculate income, make predictions, and answer “what if…?” questions. It is assumed that learners have had some experience of spreadsheets at KS3 level and therefore know how to use cell references, fill colours, and borders, and are familiar with the basic functions, e.g. SUM, AVERAGE, MAX, and MIN.

## Overview of lessons

| **Lesson** | **Brief overview** | **Learning objectives** |
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| Lesson 1: Spreadsheet warm-up | The purpose of this lesson is to revisit spreadsheet skills learners may have developed in KS3, check their understanding of spreadsheet layout, and refamiliarise them with formulae. The topic will be a television talent show *Rock Star Challenge*. Viewers will be invited to phone in and vote for their favourite bands. The phone votes generate income and a percentage of this income will be donated to charity. Learners will implement a spreadsheet solution to track voting for the talent show, and to calculate income from mobile and landline votes and how much will be donated to charity. | * Create a spreadsheet model for a given scenario
* Demonstrate how to use formulae to perform calculations
* Apply cell formatting
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| Lesson 2: The RSC Live event | The aim of this lesson is to implement a spreadsheet which represents seating for the live event of *Rock Star Challenge*. There are different seat prices for adults, students, and over 60s. Learners will use a drop-down list to select seats, and formulae will be used to calculate the price. Learners will recognise the value of streamlining a spreadsheet by entering data in just one place and using formulae to calculate prices. Formulae will be implemented to count the sold seats and calculate the remaining available seats. The spreadsheet can be used as a financial model to reflect income from seat sales, and the use of formatting will indicate seat availability at a glance. | * Implement formatting to make the spreadsheet readable and to highlight different specific information
* Use data validation when entering data in order to reduce user error
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| Lesson 3: RSC merchandise | This lesson aims to begin the process of demonstrating to learners how databases are used to manage sales and stock levels; it links to Lesson 5. Learners will be given a partly completed spreadsheet showing items of merchandise to be sold at the RSC Live event. Learners will also research the types and prices of merchandise available at events and use this information to populate a financial model. They will complete the spreadsheet with target sales figures and implement formulae to calculate income from sales. Conditional formatting will be used to visualise whether sales targets are reached. | * Implement conditional formatting techniques
* Format cells correctly, e.g. cells representing money should be currency, etc.
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| Lesson 4: RSC data visualisation | The purpose of this lesson is to demonstrate to learners how to create accurate and useful charts based on data generated in previous lessons. Charts are often used to quickly give information and to help visualise sometimes quite complex data, but it is important to select the right chart for the data and to implement the chart accurately. Learners will examine some charts which give inaccurate information due to incorrect or erroneous use of charts. Learners will also investigate adding a macro to carry out a repetitive task. | * Select the most suitable chart to visualise the selected data
* Recognise the importance of clear titles and labels
* Implement and test a macro to carry out a repetitive task
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| Lesson 5: RSC stock control | The aim of this lesson is to link with the sales activity of Lesson 3 and go behind the scenes to examine the database of RSC merchandise. Learners will discuss the use of barcodes and QR codes (2D codes) and the different kinds of data they can hold. The spreadsheet will be used to track stock and flag up to users when items need to be reordered, demonstrating the process that happens when items are sold in a shop. Each sale at the till creates a transaction in the database and an automated reordering process takes care of replenishing the stock levels once a predetermined low-stock level is reached. | * Implement a LOOKUP function to retrieve data
* Implement an IF function to give the user feedback
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| Lesson 6: Spreadsheet assessment | Finally, in this lesson learners will complete a written assessment which incorporates questions and skills from all lessons. They will demonstrate that they can apply their knowledge and skills to a previously unseen spreadsheet. There is also a practical task which, once completed, will allow learners to answer questions based on modelling various scenarios. | * Demonstrate that skills developed in the lessons can be applied to a different scenario
* Solve problems using transferable skills
* Think widely about the uses for and purposes of spreadsheets
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## Progression

Please see the learning graph for this unit for information about progression.

## Curriculum links

[**National curriculum links**](https://www.gov.uk/government/publications/national-curriculum-in-england-computing-programmes-of-study/national-curriculum-in-england-computing-programmes-of-study)

* Develop their capability, creativity, and knowledge in computer science, digital media, and information technology
* Develop and apply their analytic, problem-solving, design, and computational thinking skills

## Assessment

### Summative assessment

* Please see the assessment question and answer documents for this unit.

## Subject knowledge

This unit focuses on the following key areas of spreadsheets:

* Formatting
* Conditional formatting
* Data validation
* Formulae
* Modelling
* Cell referencing
* Charts

Enhance your subject knowledge to teach this unit through the following training opportunities:

### Face-to-face and remote courses

* [Maths in computer science (face to face)](https://teachcomputing.org/courses/CP234/maths-in-computer-science-face-to-face)
* [Maths in computer science (remote)](https://teachcomputing.org/courses/CP434/maths-in-computer-science-remote)

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