



## Using Modelling

### Level 1

Typically, pupils should show evidence of being able to:

- View existing spreadsheets and take part in a teacher-led discussion about choosing information to include in a spreadsheet, before entering data into cells for a worksheet that the teacher has prepared. Explore basic features of the software. *This might include entering numeric data into a spreadsheet model prepared by the teacher.* (Explore)
- Create a basic worksheet in a spreadsheet package with the teacher's help. *This might include updating a worksheet, with the teacher's direction, using a design the teacher has provided.* (Express)
- Be aware that digital methods can be used to communicate when working on a spreadsheet. (Exchange)
- Talk about their spreadsheet, led by the teacher. (Evaluate)
- Show their spreadsheet with the teacher's help. (Exhibit)

### Level 2

Typically, pupils should show evidence of being able to:

- Research and collect data to update the data to enter in a worksheet. Carry out a series of instructions using the spreadsheet software to answer a simple question. (Explore)
- Create a basic worksheet design with the teacher's help. *This might include changing the colours and font styles or adding a new column to the spreadsheet the teacher has provided, with occasional prompting during the process.* (Express)
- Identify and talk about how to use different digital methods to communicate when working on a spreadsheet. (Exchange)
- Talk about how to improve their spreadsheet design, prompted by the teacher. (Evaluate)
- Save their spreadsheet and/or show it to the class or group with the teacher's help. (Exhibit)

### Level 3

Typically, pupils should show evidence of being able to:

- Search for and choose data from a given source to enter into a spreadsheet model. Follow a series of instructions to enter data into the spreadsheet to help solve a simple problem. *This might include using mathematical operators such as add, subtract, multiply or divide to provide some statistics.* (Explore)
- Create a layout to help solve a given problem, with the teacher's direction. *This might include entering data into the worksheet and changing the variables to see the impact on results.* (Express)



- Use a contemporary digital method to communicate or contribute to a supervised online activity related to the spreadsheet. *This might include sending an email or making a post to a wiki, blog or discussion thread.* (Exchange)
- Make some modifications to improve their spreadsheet. *This might include updating the layout or format of the cells in the worksheet so that the information is displayed correctly.* (Evaluate)
- Save their spreadsheet with a filename and/or show it to the class or group. (Exhibit)

### Level 4

Typically, pupils should show evidence of being able to:

- Research and select data from a range of digital sources to help plan and include in their spreadsheet. Investigate and solve the problem set in the task brief. *This might include deciding on suitable data types and formulae to help calculate the information required.* (Explore)
- Create a spreadsheet that demonstrates an awareness of the audience and purpose defined in the task brief. *This might include using data types correctly for variables, using mathematical functions to create basic formulae, and using formatting such as borders or shading to make information easier to read.* (Express)
- Use one or more contemporary digital methods to communicate, exchange and collaborate in supervised online activities. *This might include sending an email with an attachment or making several relevant posts to a wiki, blog or discussion forum related to the design of or findings from the spreadsheet.* (Exchange)
- Use appropriate ICT tools and features to improve their work. *This might include using a spellchecker, formatting cells, updating data types and documenting the improvements they made to their spreadsheet.* (Evaluate)
- Save the spreadsheet in a named folder or class e-portfolio. (Exhibit)

### Level 5

Typically, pupils should show evidence of being able to:

- Research, select, edit, use and evaluate data from a range of digital sources to help design and/or collect data to store in the spreadsheet. Develop a spreadsheet solution that solves a problem showing a clear understanding of audience. *This might include using a range of software tools and features such as formulae like SUM, AVERAGE, MIN and MAX, conditional formatting and/or a graph.* (Explore)
- Create a spreadsheet that demonstrates a clear understanding of the audience and purpose defined in the task brief. *This might include using conditional formatting to identify patterns, relative cell referencing to replicate a series of formulae across cells, and a fit-for-purpose graph with a title, axis labels and/or a legend.* (Express).



- Use a range of contemporary digital methods to communicate, exchange and share their information and multimedia products, collaborating online with their peers. *This might include working online to design a spreadsheet collaboratively, or discussing and/or debating online about the content to use to populate their spreadsheet.* (Exchange).
- Use appropriate ICT tools and features to carry out ongoing improvements to their spreadsheet and evaluate process and outcome. *This might include using a 'plan, do, review' cycle to describe the process, the ICT tools they used and the improvements they made to their spreadsheet. They reflect on their spreadsheet design and refine it in an ongoing way to make it relevant for the audience and purpose defined in the task brief. They demonstrate that they have used relevant features of the spreadsheet software to make ongoing improvements and have evaluated some of the tools and features they used and the quality of the final spreadsheet in relation to the audience and purpose defined in the task brief.* (Evaluate)
- Organise, store and maintain the spreadsheet, including suitably named worksheets and workbook, in a personalised area to showcase learning digitally across the curriculum. (Exhibit)

## Level 6

Typically, pupils should show evidence of being able to:

- Research, select, edit, use and evaluate data from a range of digital sources to help design and/or collect data to store in the spreadsheet, justifying and referencing how the sources help the design and/or provide legitimate data. Use a range of software tools and features to develop a spreadsheet integrating validation and more complex formulae, using absolute cell referencing, functions and graphs, over multiple worksheets to help meet the needs of a specified audience. *This might include creating a spreadsheet of more than one worksheet, creating a summary page or dashboard to collate and manipulate information from across the worksheets and present it in a more accessible format, such as a graph.* (Explore)
- Create a spreadsheet targeted at a specific audience and purpose. *This might include integrating a wide range of software features such as complex formulae, functions using absolute cell referencing, protected cells, a fit-for-purpose graph used over multiple worksheets, and validation to reduce input errors.* (Express)
- Use a range of contemporary digital methods to communicate, exchange and share their information and multimedia products, collaborating with peers, experts and end users. *This might include collaborating on a prototype with peers, for example sharing it in a discussion forum and allowing contributors to use collaborative features of the software to add quality comments and justifications directly onto the worksheet/workbook.* (Exchange)
- Justify the software application they chose to complete the spreadsheet task, the alternatives they considered and the process they carried out in constructing the spreadsheet to make it effective for the specified audience and purpose. *This might include identifying and describing their work process and identifying key points where they made value judgements that enhanced the final spreadsheet.* (Evaluate)
- Organise, store and maintain their spreadsheet in a personalised area to showcase learning digitally across the curriculum. (Exhibit)



### Level 7

Typically, pupils should show evidence of being able to:

- Research and select the most relevant data collected from a range of sources, found and created, discriminating between these for relevance, reliability and accuracy, justifying and referencing their sources. Select and justify the most appropriate package and features to use to meet the requirements of the end user defined in the task brief. *This might include researching and selecting other spreadsheet solutions and experimenting systematically with a range of layouts, deciding on the most appropriate to meet the expectations of the target audience, using a development cycle to test and adjust their prototype routinely, and justifying choices based on their original intentions, group discussions and end users' feedback.* (Explore)
- Create an appropriate spreadsheet that exploits a range of appropriate software tools and features and may include automated features such as macros or advanced functions to assist with data input and decision making over multiple worksheets. *This might include using IF, COUNTIF, COUNTA and/or SUMIF, and/or data validation to include customised entry and/or error messages, using freeze panes, and protecting worksheets and/or workbooks with passwords to ensure confidentiality of data.* (Express)
- Exploit contemporary communication methods to exchange, share and collaborate on their information and developed ideas with peers, experts and end users, contributing to a collaborative global environment. *This might include uploading the spreadsheet to a blog to gather feedback from peers, experts and end users, acting on this in a discriminating way to further enhance the high quality and suitability of the product or information for an end user defined in the task brief.* (Exchange)
- Identify, with increasing discernment, the end user's requirements and the spreadsheet's purpose at the outset, and systematically review the final version against the requirements at the end of the process, clearly identifying which have been met and which have not. *This might include gathering end user feedback and making further refinements or setting out recommendations for improvement.* (Evaluate)
- Manage and present a logically structured digital bank of work to showcase learning across the curriculum, taking account of format, portability, size, copyright and versioning. *This might include considering the format, portability and size of the spreadsheet and associated documents before storing them.* (Exhibit)

**Pupils should demonstrate, when and where appropriate, knowledge and understanding of e-safety, including acceptable online behaviour.**