
Exemplar Commentary: Unit 10 Numerical Modelling using Spreadsheets

a: A design specification that analyses a suitable problem and describes how you will solve it by numerical modelling			Mark Awarded
a 1: You produce a design specification that takes account of user requirements. [0 1 2]	a 2: You produce a design specification that is complete, and details sources of data, numerical processing required, user aids and how output is to be presented. [3 4 5]	a 3: You produce a design specification that provides a clear, precise and complete description of a numerical modelling solution to a problem. [6 7]	6/7

The candidate has produced a detailed description of the problem requiring a spreadsheet solution. Data sources have been identified. The numerical processing required, the user aids that will be provided and how the output will be presented are detailed through hand-annotated plans of each sheet and sketches of the graphical output. This provides a clear and precise description of the solution. However, there are some aspects of the solution that appear incomplete. For example, income only seems to be recorded on the yearly sheet, whereas in the problem description an income book is mentioned as well as an expenditure file. On this basis, the lower mark in mark band 3 can be awarded.

b: Evidence of implementing your solution using suitable entry aids and processing facilities			Mark Awarded
b 1: You produce a numerical modelling spreadsheet solution which can be implemented and includes data entry, numerical processing and output. [0 1 2 3 4 5]	b 2: You produce a solution that effectively includes specialist numerical processing functions and complex spreadsheet facilities. [6 7 8 9 10]	b 3: You implement a complete solution to a complex problem that consistently shows effective use of complex spreadsheet facilities for data entry, numerical processing and presentation of output. [11 12 13 14 15]	9/15

The spreadsheet solution can clearly be implemented and includes data entry, numerical processing and output. In addition, the candidate has used the SUMIF function to calculate the category totals on each monthly expenditure sheet. Whilst this is not listed on page 118 of the unit specification, it is of a similar level of complexity to COUNTIF, which is listed. Also, a number of the more complex spreadsheet facilities listed on page 119 of the unit specification have been utilised. These include drop-down lists, named cell ranges, validation, templates, locking cells, control buttons to initiate macros and multiple sheets with links between them. The macro listing shows that subtotals have been used with a macro to sort the list and create the subtotals and another to clear them, although there is no evidence to show the results of this. On this basis, a mark towards the top of mark band 2 can be awarded. To gain 10 marks, more consistent use of specialist numerical processing functions would be expected. To achieve a mark in mark band 3, the solution needs to be complete. This means that the candidate would have needed to provide means of recording income as well as expenditure on a monthly basis. The candidate would also need to show more effective use of complex spreadsheet facilities, for example by making it clearer how subtotals were used and providing more helpful input and error messages for all validation applied.

c: A record of how you overcame your problems			Mark Awarded
c 1: You produce a record of the strategy used to implement the spreadsheet solution, including methods used to overcome problems. [0 1 2]	c 2: You show that the solutions used to overcome problems show an understanding of both the user's needs and the effective use of spreadsheet facilities. [3 4]	c 3: You use methodical, analytical and critical approaches to overcome problems during implementation. Your methods will fully address the user's needs and make effective use of spreadsheet facilities. [5]	0/5

There is no real evidence for this task. All sheets have been well annotated but this does not identify the strategy used, nor is there any record of solving problems. All of the sheets appear to be the final versions. To meet the requirements of this task, the candidate should have described how she planned to carry out the implementation of the spreadsheet. A possible strategy would be to create one monthly sheet and ensuring all formulae, functions and macros worked as intended before reproducing the sheet for each month and creating the yearly sheet. A work diary could have then been kept to record any problems that arose and the steps taken to overcome them.

d: A specification for testing your spreadsheet, and evidence of the results of these tests			Mark Awarded
d 1: You test the spreadsheet to check that it meets the requirements of the design specification. [0 1 2]	d 2: You provide evidence that a testing specification is followed that adequately tests the functionality of the spreadsheet solution. [3 4]	d 3: You provide a detailed test specification which tests all aspects of the solution with a full range of acceptable and unacceptable input, expected output, and any associated error messages. [5 6 7]	5/7

There is a reasonably detailed test plan. This includes testing cells where a validation rule has been applied with normal, extreme and abnormal data and testing the general functionality of the spreadsheet solution. Unfortunately, tests 18 to 25 have not been evidenced and there is no link back to the design specification in the testing. On this basis, the bottom mark in mark band 3 has been achieved. Evidence of the results of the remaining tests and some linking of the test results to the design specification would have increased this mark.

e: Technical documentation that explains how your spreadsheet works, and user documentation that explains how it is used			Mark Awarded
e 1: You produce clear technical and user documentation that identifies numerical processing methods used, includes copies of menus and screens used and provides expected outputs. [0 1 2 3]	e 2: You produce technical and user documentation which makes good use of graphic images, together with explanations of technical aspects of the solution, examples of menus and data input screens, types of output available and possible error messages. [4 5]	e 3: You produce complete technical and user documentation which makes effective use of graphic images, together with explanations of all technical aspects of the solution, examples of menus and data input screens, types of output available and possible error messages. [6 7 8]	5/8

There is a reasonably thorough user guide that makes good use of graphic images, includes examples of menus, data input screens, types of output and possible error messages. However, instructions for saving the spreadsheet have been omitted. The section headed Technical documentation lacks detail but the annotated sheets earlier in the work provide good explanations of the technical aspects of the solution. On this basis, the higher mark in mark band 2 has been achieved. To meet the requirements of mark band 3, the candidate would need to ensure that the user guide was complete and that all the detail required in the technical documentation was collected together in a single document.

f: An evaluation of the effectiveness of your solution and your personal performance			Mark Awarded
<p>f 1: You comment on the effectiveness of the final solution, with some overall indication of how the work may be improved in the future.</p> <p>You evaluate aspects of your personal performance that affected the solution.</p> <p>Your report may contain errors in spelling, punctuation and grammar.</p> <p>[0 1 2]</p>	<p>f 2: You provide an analysis of your final solution, identifying the strengths and weaknesses in order to identify how the work may be improved in the future.</p> <p>You evaluate aspects of your personal performance by identifying your strengths and weaknesses that affected the solution, with some suggestions for improvement to the overall process.</p> <p>Your report contains few spelling, punctuation and grammar errors.</p> <p>[3 4 5]</p>	<p>f 3: You provide a full critical analysis of your final solution identifying how well it meets the initial brief, taking into account user feedback in order to identify how the work may be improved in the future.</p> <p>You evaluate aspects of your personal performance by identifying your strengths and weaknesses and how you may address these issues to be more effective in the future.</p> <p>Your report is consistently well structured and there will be few, if any, spelling, punctuation and grammar errors.</p> <p>[6 7 8]</p>	<p>3/8</p>

The candidate has commented on the effectiveness of her solution in relation to the user requirements. She has also made some suggestions as to how the work might be improved. There is no identification of strengths and weaknesses so this evaluation currently meets the requirement for mark band 1 for this aspect. The candidate has also attempted to evaluate her own performance. She has identified strengths of her performance relating to her ability to apply what she was taught; although there is some suggestion that she could have done so more effectively. She has also identified weaknesses relating to the time wasted by dealing with each of the monthly sheets separately. There are, however, no suggestions for improvement to the overall process. This suggests a mark at the bottom of mark band 2 for this aspect of the task. Finally, the evaluation is quite well structured with headings, sub-headings and bullet lists, although these are not used consistently. There are few spelling, punctuation and grammar errors. This would suggest a mark at the bottom of mark band 3 for the quality of written communication. On balance, a mark of 3 would be appropriate. To improve this mark the candidate would need to provide a more critical analysis of the solution, including feedback from the user. The analysis of the candidate's own performance needs to be in greater depth. How did she initially approach the task? How did she ensure it was completed in the time available? Were there things she had planned to include but that she was not able to? Were there aspects that were not done as well as others because of time pressures? Was too much time spent on one particular area? The candidate would also need to say how she would address these issues to be more effective in future. The quality of written communication could also be improved by more consistent use of sub-headings, for example.