



Key skills test

Information and communication technology

Level 4

Test specification

Introduction

- 1 The information and communication technology (ICT) key skill qualification will be awarded to candidates who are able to demonstrate that their attainment meets national standards in ICT in both their portfolio of evidence and an external assessment (hereafter referred to as a test).
- 2 The test provides the external assessment component of each key skill at each level. The test is externally set and marked. The purpose of the test is to assess the candidate's competence to carry out practical ICT tasks by following instructions to produce specified outcomes.
- 3 Performance in the test is used to complement and support performance in the internal assessment component, the portfolio of evidence. The portfolio must contain evidence of the candidate's purposeful and effective use of ICT which meets the full requirements of part B of the key skill standards. The portfolio evidence is internally set, internally assessed and externally moderated. A candidate must satisfy the requirements of both components to be awarded the key skill.
- 4 The purpose of this test specification is to inform the development of tests for the ICT key skill at level 4 by clarifying those aspects of the standards which may be tested.
- 5 This test specification is intended to provide writers, editors and reviewers, and also teachers and candidates, with detailed information about the acceptable content, coverage and demand for tasks, together with the range of scenarios suitable for providing contexts for tasks at level 4.
- 6 This guidance should be read in conjunction with:
 - *Level 4 information and communication technology key skills standards* (QCA, CCEA, ACCAC, 2004)
 - *Guidance on the key skills* (QCA, CCEA, ACCAC, 2004).
- 7 This test specification has been designed to support the development and production of tests in English, Welsh and Gaeilge.

Design of tests

Principles

- 8 In creating tests, writers must take the following into account:
- the test will last for 2 hours and 30 minutes
 - the test will consist of a sequence of practical tasks, worth a total of 50 marks
 - each candidate will have the use of a computer, suitable software and access to a printer during the test
 - any datafiles specified for use in the test will be placed on the QCA website in advance of the test, for centres to download and make available to candidates as read-only files on a network or on a write-protected floppy disk or other secure medium (for example CD-ROM); centres will be responsible for making such datafiles available to candidates both during and, for preparation purposes, before the test
 - candidates will be supervised while taking the test
 - candidates will have access to the standard help facilities for the software they are using, but not to printed manuals, help sheets or notes.
- 9 This test specification is complemented by awarding body instructions to centres on the conduct of tests and guidance on arrangements for candidates with special requirements.

Scope and demand of tests

- 10 The test must match the identified requirements of the ICT standards at level 4. This means that the test will focus on specific aspects of part A of the key skill standards, 'You need to know how to', as well as drawing on part B, 'You must'. For the purpose of this test specification, the requirements are organised into the skill areas:
- Preparing and using ICT to find and develop information
 - Present information
 - Standard ways of working with ICT.
- 11 The knowledge and skills defined in each skill area are organised into those associated with general software techniques and with application-specific software techniques. To ease identification of the complete set of techniques associated with particular types of application software, the same material is reorganised and presented in Appendix 1 under the headings:
- General software procedures
 - Word (document) processing software
 - Database software
 - Spreadsheet software.
- 12 The level 4 guidance is similar to that for level 3. Where there are differing requirements they are indicated with underlining. The level 4 tests will include ICT skills related to the management of information, the design of databases and spreadsheets and the presentation of information. They will also place more emphasis on the integration of information management across applications, problem analysis and problem solving.

Pass mark

- 13 The test will be designed to have a pass mark in the range of 25–35 marks out of 50. Responsibility for setting the final pass mark resides with the awarding bodies acting jointly.

Form of questions

- 14 The level 4 test is intended to enable candidates to demonstrate their ICT skills, knowledge and understanding through practical tasks. Each test should sample the requirements of this test specification by presenting a context within which a sequence of tasks is set.

- 15 The evidence for assessment will be in the form of printouts required at defined points in the sequence of tasks. Evidence may be required of steps which normally appear only as a screen display (for example directory/folder structure and content), so candidates should be able to use screen print facilities. Some of the skills defined in the specification do not readily yield assessment evidence in the form of a printout but are included because they may be needed as intermediate stages in tasks. Appendix 2 describes how tasks and instructions will be presented.
- 16 The context of a time-limited sequence of specified tasks necessarily restricts the test to those aspects of the key skill standards that are suitable for testing in this way. Skills such as making judgements about the quality of information and decisions about when and how to apply ICT to good effect are assessed more effectively by means of the portfolio, which must provide evidence covering part B of the standards.
- 17 The sequence of tasks in the test, together with the related mark scheme, should be designed to minimise the problem of 'follow-through' error between tasks. Being able to complete a task appropriately should not generally depend on having completed the previous task correctly.
- 18 All tasks must avoid making demands on candidates beyond the scope of the ICT skills being assessed. In particular, all language used in the questions and scenarios should be clear and direct. Only information relevant to the tasks should be included. Expectations of knowledge or familiarity with specialist contexts, concepts and terms beyond those associated with the ICT topics in this test specification must be avoided.

Structure of tests

- 19 The ICT key skill is concerned with people needing to find information, to decide what is relevant, to explore, bring together and develop information, and to present information, all to good effect in meeting their purposes. Examples of scenarios which provide opportunities to develop suitable tasks include:
 - travel, for example journeys by car or public transport, holidays away from home
 - leisure activities, for example hobbies, sports, clubs, TV, cinema, music, theatre
 - employment, for example job roles, organisations, pay rates, income
 - domestic activities, for example cooking, shopping, DIY
 - personal items, for example health, social security, social activities, address books
 - goods, for example food, clothing, toys, furniture, audio-video equipment, cars
 - climate and weather, for example rainfall, hours of sun, temperatures, forecasts
 - public records, for example library catalogues, electoral registers, census data, DVLA records
 - standard documents, for example invoices, order forms, bank statements
 - production, for example products, materials, suppliers, overheads, drawings, labour
 - services, for example house agents, banks, mail order, education, health.

Context

- 20 The whole test should be based on a vocational context defined as a brief scenario, usually supported by a set of data. Scenarios should be chosen to maximise the likelihood of candidate familiarity with, or understanding of, the context. Sufficient descriptions and/or images will be necessary, to ensure that the scenario is understood by all concerned. In all scenarios it is essential to be brief, to use simple language and to avoid jargon.
- 21 The scenario and any data sets should provide opportunities for analysing, organising and presenting information using:
 - word (document) processing, including presentation of text, tables and images
 - database processing, including design, data management, queries, forms and reports
 - spreadsheet processing, including design, data management, modelling, graphs and charts.
- 22 Every effort must be made to ensure that scenarios are free of any form of bias (for example gender, ethnic, age) which might favour or disadvantage any candidate or group of candidates.

Skill areas and mark allocations

Underlined items are those which are additional to the level 3 requirements.

Skill area 1 – Preparing and using ICT to find and develop information

Up to 48 marks

1.1 – Prepare ICT – design and develop structures and procedures and enter information

Tasks may, for example, require candidates to use...

general software procedures to:

- a enter, insert and combine different forms of information including text, tables, records, values, formulas and objects, such as lines, images, text boxes, spreadsheet charts or sheets, database queries or reports
- b import and/or open text files (both plain text and comma-separated values), from image files and files from other applications
- c link information within or between applications (for example link a chart from a spreadsheet with a word-processed report so any change in the data is reflected in the report)

word (document) processing software to:

- d import and/or open comma delimited text files and save and/or convert them into mail merge source files
- e perform mail merge including creation and printing of the unmerged main document, creation or selection of the data source using suitable software and printing pages of the merged document
- f develop complex forms and documents requiring the use of tables, borders and shading to meet specified requirements

database software to:

- g develop database structures for a relational database by creating tables and defining field names, data types and sizes including text, number, currency, date, time, logical, image
- h set field properties including type, size, format, data validation (value and error messages, range checks), primary key, indexes
- i design suitable structures to relate two existing tables including foreign keys and relationships
- j document database structures including printing field names, field data types and, field format, field validation information and field sizes and relationships between tables
- k develop and document (print) forms that facilitate the entry and editing of records in a table including titles, spacing, lines, data entry locations and calculated fields

spreadsheet software to:

- l design suitable structures including sheet names, links between sheets, cell names, cell range names, row/column headings, cell formats, formulas and functions
- m import and/or open comma delimited text files and position the set of data in any selected worksheet location
- n construct and use look-up tables to aid information management
- o design and develop sheets to enable 'what if ...' analyses to be carried out, including data tables that substitute values for one or two variables used directly or indirectly in a formula.

1.2 – Use ICT to search for and find information

Tasks may, for example, require candidates to use...

general software procedures to:

- a locate files in a directory (folder) structure including use of subdirectories (subfolders)
- b find text including use of the wildcards * and ?

word (document) processing software to:

- c find components of documents including specified text, whole word searches and with/without case sensitivity
- d use mail merge facilities to select and print information which meets a certain criteria(eg send a letter to only those males who are within a certain age range)

database software to:

- e find text and values in a database field including the use of the wildcards * and ?
- f produce database queries using
 - criteria based on one or more fields
 - field data types including text, number, currency, date, time, logical
 - the relational operators <, >, =, <=, >=, < >
 - the logical operators AND, OR, NOT

spreadsheet software to:

- g find text, values and formulas in spreadsheet cells using
 - the relational operators <, >, =, <=, >=, < >
 - the logical operators AND, OR
- h filter information using search criteria based on one or more columns
- i define and apply filters to select a subset of rows/records
- j select specific cells to search for other rows/records containing similar data.

1.3 – Use ICT to explore and develop information and derive new information

Tasks may, for example, require candidates to use...

general software procedures to:

- a insert, delete, amend, move and copy text, records/rows and fields/columns using appropriate tools, for example cut, copy, paste, drag and drop, find and replace
- b track and display changes and editing comments in modified documents
- c apply single and multiple sort criteria to group items and sort data into ascending or descending order

database software to:

- d combine/append database tables/ data files
- e design tables (including the addition of fields) queries and reports (including sorting on one or more fields and grouping data) for a relational database
- f define and use calculations in database queries and reports including calculated fields and report totals and subtotals

spreadsheet software to:

- g group and subtotal results
- h devise formulas to derive required results, including the use of:
 - parentheses and arithmetic operators +, -, *, /
 - functions including SUM, AVERAGE, MIN, MAX, IF, COUNTIF, COUNT, LOOKUP (or MATCH)
 - precision and rounding of calculations to a specified number of decimal places including the use of the functions INT, TRUNC, ROUND, ROUNDUP, ROUNDDOWN
 - relational operators <, >, =, <=, >=, < >
 - logical operators AND, OR

- relative cell references in spreadsheet formulas, for example =G11*D4
- absolute cell references in spreadsheet formulas, for example =C6-\$B\$2, =\$J\$1*E2
- mixed cell references in spreadsheet formulas, for example =C\$6-B7, =F8*\$G3
- references to cells on another sheet
- references to cell ranges, for example C3:C8, D4:F9, \$B\$2:\$E\$2
- cell range names in formulas and functions
- replication of a formula into other cells
- i change values and formulas to carry out 'what if ...' analyses to explore effects and predict results
- j create charts to show results or trends including selecting data series, type of chart (for example pie chart, single or multiple line graph, single or stacked horizontal or vertical bar chart) and suitable titles, legends, labels, axes.

Skill area 2 – Presenting information

Up to 15 marks

2.1 – Develop and use structures for integrating and presenting information

Tasks may, for example, require candidates to use...

general software procedures to:

- a set and apply suitable fonts, font styles and font sizes
- b format numeric information including number of decimal places, currency, percentage, date, time
- c align text horizontally including left, right, centred, fully justified and vertically including top, centred and bottom
- d insert and modify the appearance of lines (borders)
- e select, insert and process images including size, crop, text wrap, use of behind/in front
- f position, group and anchor text, images and other objects
- g set page layout for left, right, top and bottom margins, orientation, headers and footers
- h insert automated fields including page number, date filename and path
- i print selectively, for example current page, last page, specified page range

word (document) processing software to:

- j create and modify document templates and paragraph styles including indents (left and right whole paragraph, first line, hanging) and line spacing
- k implement bullets and numbering of paragraphs and lists including multilevel bullets and numbering
- l present lists of data using tabulation including left, right, centre and decimal
- m create and modify table structures including add, remove and size rows and columns, set borders and shading, split and merge cells
- n present documents in column layout including column width, spacing and separator lines
- o insert section breaks and modify section page layout and header/footer content
- p incorporate and position in documents information imported or linked from other applications, for example a chart from a spreadsheet, a list of names from a database table

database software to:

- q develop and format reports including titles, spacing, lines, headers, footers and grouping

spreadsheet software to:

- r insert, delete and size rows and columns
- s set, copy, move and clear cell (and cell range) contents and formats
- t control printed copy including pagination, row and column headings, grid lines, hiding data, adjusting column widths, showing formulas
- u format charts including titles, labels, shading, patterns, line styles and borders plot more than one set of data on a single chart including use of a secondary y-axis.

Skill area 3 – Standard ways of working with IT

Up to 3 marks

3.1 – Plan use of IT, ensure work is accurate and save work

- a check documents for accuracy including spelling and meaning
- b check document layout including pagination, paragraphs, tables, columns, graphics
- c use print preview to proof-read documents
- d check formulas and functions for accuracy using independent methods where appropriate
- e create suitable directory (folder) structures including subdirectories (subfolders)
- f rename, move and copy files
- g save working files as backup copy using different filenames
- h use word processing, database and spreadsheet software to create, open, close and save files using appropriate filenames and file types (eg filename extension, link to application)

Appendix 1

This appendix gathers the items listed under 1.1, 1.2, 1.3 and 2.1 and presents them under general software procedures and under each of the main software applications. Centres should ensure that the software resources provided and the techniques being taught provide adequate coverage. Ways of working are not covered in this appendix.

Underlined items are those which are additional to the level 3 requirements.

General software procedures (possible in most systems and application software)

1.1 – Prepare ICT – design and develop structures and procedures and enter information

- enter, insert and combine different forms of information including text, tables, records, values, formulas and objects such as lines, images, text boxes, spreadsheet charts or sheets, database queries or reports
- import and/or open text files (both plain text and comma-separated values), from image files and files from other applications
- link information within or between applications (for example link a chart from a spreadsheet with a word-processed report so any change in the data is reflected in the report).

1.2 – Use ICT to search for and find information

- locate files in a directory (folder) structure including use of subdirectories (subfolders)
- find text including use of the wildcards * and ?

1.3 – Use ICT to explore and develop information and derive new information

- insert, delete, amend, move and copy text, records/rows and fields/columns using appropriate tools, for example cut, copy, paste, drag and drop, find and replace
- track and display changes and editing comments in modified documents
- apply single and multiple sort criteria to group items and sort data into ascending or descending order.

2.1 – Develop and use structures for integrating and presenting information

- set and apply suitable fonts, font styles and font sizes
- format numeric information including number of decimal places, currency, percentage, date, time
- align text horizontally including left, right, centred, fully justified and vertically including top, centred and bottom
- insert and modify the appearance of lines (borders) and shading
- select, insert and process images including size, crop, text wrap, use of behind/in front
- position, group and anchor text, images and other objects
- set page layout for left, right, top and bottom margins, orientation, headers and footers
- insert automated fields including page number, date filename and path
- print selectively, for example current page, last page, specified page range.

Word (document) processing software

1.1 – Prepare ICT – design and develop structures and procedures and enter information

- import and/or open comma delimited text files and save and/or convert them into mail merge source files
- develop complex forms and documents requiring the use of tables, borders and shading to meet specified requirements
- perform mail merge including creation and printing of the unmerged main document, creation or selection of the data source using suitable software and printing pages of the merged document.

1.2 – Use ICT to search for and find information

- find components of documents including specified text, whole word searches and with/without case sensitivity.
- Use mail merge facilities to select and print information which meets a certain criteria (eg send a letter to only those males who are within a certain age range)

2.1 – Develop and use structures for integrating and presenting information

- create and modify document templates and paragraph styles including indents (left and right whole paragraph, first line, hanging) and line spacing
- implement bullets and numbering of paragraphs and lists including multilevel bullets and numbering
- present lists of data using tabulation including left, right, centre and decimal
- create and modify table structures including add, remove and size rows and columns, set borders and shading, split and merge cells
- present documents in column layout including column width, spacing and separator lines
- insert section breaks and modify section page layout and header/footer content
- incorporate and position in documents information imported or linked from other applications, for example a chart from a spreadsheet, a list of names from a database table.

Database software

1.1 – Prepare ICT – design and develop structures and procedures and enter information

- develop database structures for a relational database by creating tables and defining field names, data types and sizes including text, number, currency, date, time, logical
- set field properties including type, size, format, data validation (value/range and error messages), primary key, indexes
- design suitable structures to relate two existing tables including foreign keys and relationships
- document database structures including printing field names, field data types, field sizes, field format, field validation information and relationships between tables
- develop and document (print) forms that facilitate the entry and editing of records in a table including titles, spacing, lines, data entry locations and calculated fields.

1.2 – Use ICT to search for and find information

- find text and values in a database field (including the use of the wildcards * and ?)
- produce database queries using:
 - criteria based on one or more fields
 - field data types including text, number, currency, date, time, logical
 - the relational operators <, >, =, < >, <=, >=
 - the logical operators AND, OR, NOT
- produce database reports based on tables or queries.

1.3 – Use ICT to explore and develop information and derive new information

- combine/append database tables/data files
- design tables (including the addition of fields) queries and reports (including sorting on one or more fields and grouping data) for a relational database
- define and use calculations in database queries and reports including calculated fields and report totals and subtotals.

2.1 – Develop and use structures for integrating and presenting information

- develop and format reports including titles, spacing, lines, headers, footers and grouping.

Spreadsheet software

1.1 – Prepare ICT – design and develop structures and procedures and enter information

- design suitable structures including sheet names, links between sheets, cell names, cell range names, row/column headings, cell formats, formulas and functions
- import and/or open comma delimited text files and position the set of data in any selected location
- construct and use look-up tables to aid information entry and management
- design and develop sheets to enable ‘what if ...’ analyses to be carried out, including data tables that substitute values for one or two variables used directly or indirectly in a formula.

1.2 – Use ICT to search for and find information

- find text, values and formulas in spreadsheet cells using:
 - the relational operators <, >, =, <=, >=, <>
 - the logical operators AND, OR
 filter information using search criteria based on one or more columns
- define and apply filters to select a subset of rows/records
- select specific cells to search for other rows/records containing similar data.

1.3 – Use ICT to explore and develop information and derive new information

- group and subtotal results
- devise formulas to derive required results, including the use of:
 - parentheses and arithmetic operators +, -, *, /
 - functions including SUM, AVERAGE, MIN, MAX, IF, COUNTIF, COUNT, LOOKUP (or MATCH)
 - precision and rounding of calculations to a specified number of decimal places including the use of the functions INT, TRUNC, ROUND, ROUNDUP, ROUNDDOWN
 - relational operators <, >, =, < >, <=, >=
 - logical operators AND, OR, NOT
 - relative cell references in spreadsheet formulas, for example =G11*D4
 - absolute cell references in spreadsheet formulas, for example =C6-\$B\$2, =\$J\$1*E2
 - mixed cell references in spreadsheet formulas, for example =C\$6-B7, =F8*\$G3
 - references to cells on another sheet
 - references to cell ranges, for example C3:C8, D4:F9, \$B\$2:\$E\$2
 - cell range names in formulas and functions
 - replication of a formula into other cells
- change values and formulas to carry out ‘what if ...’ analyses to explore effects and predict results
- create charts to show results or trends including selecting data series, type of chart (for example pie chart, single or multiple line graph, single or stacked horizontal or vertical bar chart) and suitable titles, legends, labels, axes.

2.1 – Develop and use structures for integrating and presenting information

- insert, delete and size rows and columns
- set, copy, move and clear cell (and cell range) contents and formats
- control printed copy including pagination, row and column headings, grid lines, hiding data, adjusting column widths, showing formulas
- format charts including titles, labels, shading, patterns, line styles and borders
- plot more than one set of data on a single chart including use of a secondary y-axis.

Appendix 2

Tasks and instructions

- 1 The test should be constructed as a series of related tasks, headed Task A, Task B, etc, each specifying the type of software to be used and containing the instructions to be followed by the candidate.
- 2 Each task should form a natural component of the test, for example the production of a printed report or the completion of a spreadsheet structure and the printing of copy containing the formulas.
- 3 A complete test should normally include between two and five tasks.
- 4 Where the type of software required for a task differs from the preceding task this should be specified.
- 5 Instructions within the tasks should be in a single sequence through the test, numbered 1, 2 ... and using parts a, b ... where necessary.
- 6 Instructions should not be so detailed that they limit opportunities for candidates to demonstrate their technical skills and knowledge.

Award of marks

- 7 Marks for the completion of each instruction must be clearly indicated. Where more than one mark is awarded for an instruction the mark scheme must show clearly how each mark is awarded, relating each mark to one or more features in the evidence provided by the candidate's printed copy.

Evidence

- 8 Where a skill to be tested does not produce direct evidence for assessment in the form of printed copy, candidates may be requested to produce printed evidence of a screen display.

Candidate identification

- 9 Every page of printout required in the test must include the candidate's name, the date and the printout title or number. The instructions in the test must specify these requirements.