



# Syllabus

## Cambridge International Diploma

### ICT Starters

### (Initial Steps, Next Steps, On Track)

Programming modules 4272, 4282 and 4293 available for moderation from January 2019.  
All other modules available from January 2018.



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## Why choose Cambridge?

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Cambridge Assessment International Education prepares school students for life, helping them develop an informed curiosity and a lasting passion for learning. We are part of the University of Cambridge.

Our international qualifications are recognised by the world's best universities and employers, giving students a wide range of options in their education and career. As a not-for-profit organisation, we devote our resources to delivering high-quality educational programmes that can unlock learners' potential.

Our programmes and qualifications set the global standard for international education. They are created by subject experts, rooted in academic rigour and reflect the latest educational research. They provide a strong platform for learners to progress from one stage to the next, and are well supported by teaching and learning resources.

Our mission is to provide educational benefit through provision of international programmes and qualifications for school education and to be the world leader in this field. Together with schools, we develop Cambridge learners who are confident, responsible, reflective, innovative and engaged – equipped for success in the modern world.

Every year, nearly a million Cambridge students from 10 000 schools in 160 countries prepare for their future with an international education from Cambridge International.

**'We think the Cambridge curriculum is superb preparation for university.'**

**Christoph Guttentag**, Dean of Undergraduate Admissions, Duke University, USA



### Quality management

Our systems for managing the provision of international qualifications and education programmes for students aged 5 to 19 are certified as meeting the internationally recognised standard for quality management, ISO 9001:2008. Learn more at [www.cambridgeinternational.org/ISO9001](http://www.cambridgeinternational.org/ISO9001)

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### Changes to this syllabus

For information about changes to this syllabus for 2018, go to page 81.  
The latest syllabus is version 1, published January 2018.



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## 1 Why choose this syllabus?

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Information and Communications Technology (ICT) is now part of the educational experience of children in most parts of the world. Taught as a subject in its own right, as well as being embedded within the curriculum, ICT is increasingly regarded as a new 'literacy', alongside reading, writing and numeracy. Cambridge ICT Starters is designed to introduce learners to the key ICT applications they need to use in order to acquire that literacy, and to understand the impact of technology on our daily lives. The syllabus provides a framework in which ICT competence and practical skills can be developed within an environment that is appropriate for the age of the learners. It also provides a structured scheme of assessment. Where appropriate, guidance on the eSafety and ethical implications of the technologies used within each module are outlined. Modules can be delivered according to the needs of each learning situation – across the curriculum or as a separate course of study. At each stage of assessment, learners will use ICT to:

- communicate
- handle information
- model
- program a solution.

This syllabus operates at three levels of the Cambridge Assessment International Education Framework for Qualifications:

- Initial Steps
- Next Steps
- On Track.

### How can I find out more?

#### If you are already a Cambridge school

You can make entries for this qualification through your usual channels. If you have any questions, please contact us at [info@cambridgeinternational.org](mailto:info@cambridgeinternational.org)

#### If you are not yet a Cambridge school

Learn about the benefits of becoming a Cambridge school at [www.cambridgeinternational.org/startcambridge](http://www.cambridgeinternational.org/startcambridge)

Email us at [info@cambridgeinternational.org](mailto:info@cambridgeinternational.org) to find out how your organisation can register to become a Cambridge school.

### Target group

Cambridge ICT Starters are predominantly aimed at learners aged between 5 and 15 years. The qualifications are suitable for those in primary and secondary education. However the content can be delivered to learners of any age.

## 2 Assessment at a glance

### Structure

Each level of the scheme contains two stages, each with an equal number of modules. Centres can teach the modules in any order, although candidates must achieve all modules at Stage 1 for a Cambridge ICT Starters Stage 1 Certificate and all modules at both stages for a Full Certificate.

	Initial Steps	Next Steps	On Track
Stage 1 modules	3	4	4
Stage 2 modules	3	4	4

Each module contains a short introduction explaining the purpose of the module, followed by the 'Learning objectives' table. This table shows which skills must be assessed for that module, along with further details about the evidence the learners must produce to demonstrate that they have achieved the learning objectives. Each module then sets out 'Getting started' advice for the teacher, to help them plan the delivery of the module, and finishes with an Assessment guidelines section.

You can obtain further advice from the Cambridge International website about how you can join our discussion group forum for teachers of Cambridge ICT Starters at [www.cambridgeinternational.org](http://www.cambridgeinternational.org)

### Form of assessment

At the end of each module, centres must assess learners in an assessment test to show that they can demonstrate each of the learning objectives with no additional help from their teacher or their peers.

- Cambridge International provides question papers and resource files for Cambridge ICT Starters, downloadable by centres from CIE Direct.
- If centres wish to amend question papers and resource files, these must be approved by Cambridge International.
- Centres must submit their proposed papers to Cambridge International for approval at least eight weeks before the learners take the assessment.
- Any amendments to the Cambridge International question papers and resource files must be kept to a minimum.
- These amendments must be restricted to only minor changes tailoring them towards curriculum topics or the local learning environment, or to align with the software used by the centre.
- These amendments must not alter the demand of any question or rewrite any question.
- Question papers that a centre has already submitted to Cambridge International and that have been approved within a previous entry do not need to be resubmitted.

For more information, please contact [info@cambridgeinternational.org](mailto:info@cambridgeinternational.org)

At the end of each assessment test, the teacher marks the question papers and completes a record of assessment (*Learning Objectives Record Sheet*) for each learner. The teacher should make a photocopy of this sheet for each learner and must sign each sheet. Centres must send samples of learners' work to Cambridge International for external moderation; please see section 4. The sample must include the question papers completed by the learners, the required evidence of learners' work and the *Learning Objectives Record Sheet*. Cambridge International will not return the samples, so centres should keep a copy of each learner's submission.

**Important note:** In some cases, Cambridge International accepts that it is not possible or practical to submit hard copy evidence for a particular learning objective. Where the 'Learning objectives' table states 'Teacher evidence', Cambridge International relies on the professionalism of teachers to sign the sheet, confirming that they have observed the learners achieving that objective.

Learners will receive a Pass or Merit grade in each assessment test. A learner's overall grade will be a combination of the results of all modules.

To achieve a Pass in a module, learners must meet all the Pass criteria specified on the *Learning Objectives Record Sheet*. To achieve a Merit in a module, learners must achieve all the Pass **and** Merit criteria within that module.

Cambridge International will award a Merit grade for each level of Cambridge ICT Starters where the learner has achieved Merit grades in the majority of modules taken at each stage or level:

Level	Stage 1 Certificate (Merit)	Full Certificate (Merit)
Initial Steps	2 or more modules	4 or more modules
Next Steps	3 or more modules	5 or more modules
On Track	3 or more modules	5 or more modules

Assessment tests should take place in a classroom environment under controlled conditions. Tests will take less time at lower levels than at higher levels, but no assessment test should exceed 1 hour (Initial Steps) or 1½ hours (Next Steps / On Track). For some modules, particularly at On Track level, learners may need to do some preparatory work so that they can complete the assessment test in the allowed time.

## Availability

The syllabus and assessment materials are available in English and Spanish. Subject to Cambridge International guidelines, centres may also translate the syllabus and administer assessment tasks in any local language (please contact Cambridge International Customer Services for more details).

Submission of a learner's work for moderation is available on demand. This enables the formal assessment of a learner's skills to take place at any time of the year, to fit in with the needs of the individual or that of the school's curriculum. For details of monthly submission dates (available all months except March) and administrative arrangements, please refer to the administrative guide at [www.cambridgeinternational.org/cambridge-for/exams-officers/cambridge-exams-officers-guide/](http://www.cambridgeinternational.org/cambridge-for/exams-officers/cambridge-exams-officers-guide/)

## Certification

Learners must complete all modules at both stages in order to achieve a Full Certificate at a particular level.

Successful completion of the Stage 1 modules will lead to the Cambridge ICT Starters Stage 1 Certificate at the appropriate level, stating the grade achieved overall.

Successful completion of all Stage 1 and Stage 2 modules will lead to the Cambridge ICT Starters Full Certificate at the appropriate level, stating the grade achieved overall. For the Full Certificate, centres can submit work all at once (i.e. all modules together), as an alternative to two separate stages.

## Progression

Each stage of Cambridge ICT Starters has been designed to facilitate progression through the scheme. Learners will develop the skills demanded for particular applications through each level, so that they can build on the competence they have achieved previously.

Initial Steps	Next Steps	On Track
<b>Stage 1</b>	<b>Stage 1</b>	<b>Stage 1</b>
Starting with Text (4269)	Exploring Documents (4278)	Documents for a Purpose (4289)
Starting Images (4270)	Exploring Images (4279)	Multimedia for a Purpose (4290)
Starting Graphs (4271)	Exploring Spreadsheets (4280)	Spreadsheets for a Purpose (4291)
	Exploring Databases (4281)	Databases for a Purpose (4292)
<b>Stage 2</b>	<b>Stage 2</b>	<b>Stage 2</b>
Starting Programming (4272)	Exploring Programming (4282)	Programming for a Purpose (4293)
Starting Searches (4273)	Exploring the Internet (4283)	Website Design for a Purpose (4294)
Starting Email (4274)	Exploring Email (4284)	Networks for a Purpose (4295)
	Exploring Multimedia (4285)	Video or Animation for a Purpose (4296)

There is no requirement for learners to complete one full level before progressing to the following level; centres may decide to enter learners for Stage 1 only. However, at each level above Initial Steps, it is assumed that the learner possesses the relevant skills and knowledge of the earlier levels. Learners wishing to progress from the On Track level, or those who require formal assessment above this level, are encouraged to develop their practical skills in a more integrated, work-related context. Please refer to the Cambridge International website ([www.cambridgeinternational.org](http://www.cambridgeinternational.org)) for information on further Cambridge International ICT qualifications.



## Maintaining the Cambridge International standard

Cambridge International must ensure the integrity of its assessment procedures, so that everyone can have full confidence in the wide range of qualifications offered and the associated standards. In applying for registered centre status, centre staff acknowledge that they will conduct the scheme carefully, to the standards described in the individual qualification syllabuses.

When an institution applies to become a registered centre for the first time, Cambridge International will assess the suitability of staff, premises, resources and procedures, before allowing the centre to operate Cambridge International qualifications.

To ensure quality, Cambridge International moderators externally moderate all assessments. The final decision on the performance of a learner will rest with the principal moderator for the specific module.

## Fees

You can obtain details of fees for these qualifications from Cambridge International Customer Services.

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## 3 Syllabus content

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The outlines below suggest the range of concepts which should be taught, whether or not they are explicitly assessed. Learners' real-life experience of using ICT (including computers, tablets, smart devices, digital media players, social media and video games) should be acknowledged and referred to whenever relevant. This should include age-appropriate eSafety and ethical guidance.

### Initial Steps outline

Learners should learn to use ICT hardware and software safely, confidently and purposefully to communicate and handle information, and to support their problem-solving, recording and expressive work. They should be taught to reflect, discuss and consider the implications of using ICT hardware and software.

#### Skills developed

Learners should learn to:

- use ICT hardware and software and develop knowledge of ICT
  - use a variety of ICT hardware and software (which may include various kinds of computers and keyboards, as well as TV, DVD, video devices, music players and mobile/cell phones) to carry out a variety of functions in a range of contexts
  - explore the use of computer systems and control technology in everyday life
  - examine and discuss their experiences of ICT, and look at the use of ICT in the outside world
- communicate using ICT
  - begin to assemble text and images to communicate ideas in different forms using words, tables, pictures and sound
  - create, redraft and present ideas using text manipulation, laying out text, checking for errors and correcting them
  - use a paint or graphics package to present ideas
  - recognise the need to communicate safely and responsibly
- handle information using ICT
  - explore and use a variety of methods to enter and store information onto a computer
  - classify information using ICT
  - store, retrieve and process information that has been stored in a pre-prepared database or spreadsheet
- program solutions to problems
  - understand that problems can be solved by working out a precise sequence of steps
  - recognise that computers are controlled by programs that are written by developers
  - create sequences of instructions (programs) to control a computer.

## Next Steps outline

Learners should learn to extend the range of ICT tools they use for safe and effective communication, investigation and programming; they should use ICT to safely select information, sources and media that are suitable for their purpose and assess the value of ICT in their work.

### Skills developed

Learners should learn to:

- use hardware and develop knowledge of ICT
  - use ICT to explore and solve problems in the context of work across a variety of subjects
  - use ICT to further their understanding of information that they have retrieved and processed
  - discuss their experience of using ICT and assess its value in their work
  - investigate parallels with the use of ICT in the wider world, consider the effects of such uses and compare them with other methods
- communicate using ICT
  - use ICT hardware and software to communicate ideas and information in a variety of forms, incorporating text, graphs, pictures and sound, as appropriate, showing sensitivity to the needs of their audience in choice of layout, typeface or graphics, as well as considering the most appropriate use of such tools to safely and respectfully present their ideas or arguments
  - use hardware and software to organise, reorganise and analyse ideas and information
- handle information using ICT
  - interrogate information that has been stored, developing the need to take care in framing questions when collecting, accessing or interrogating information
  - interpret, begin to analyse and check the plausibility of information held on ICT systems, and select the elements required for particular purposes
  - select suitable information and media responsibly, and classify and prepare information for processing with ICT, checking for accuracy
- program solutions to problems
  - write programs using sequences of commands
  - use repetition and modularity (procedures) in programs.

## On Track outline

Learners should learn to become critical and increasingly autonomous users of ICT, aware of the ways in which ICT tools and information sources can influence their life and work. They should understand the limitations of such tools and of the results they produce, and use the concepts and relevant technical terms associated with ICT systems and software.

### Skills developed

Learners should learn to:

- use hardware and develop knowledge of ICT
  - use ICT hardware and software autonomously
  - consider the purposes for which information is to be processed and communicated
  - use their knowledge and understanding of ICT to design information systems, and to evaluate and suggest improvements to existing systems
  - investigate problems by modelling, measuring and controlling, and by constructing ICT procedures
  - consider the limitations of ICT tools and information sources, and of the results they provide, and compare their effectiveness and efficiency with other methods of working
  - discuss some of the social, economic, ethical, moral and security issues raised by ICT
- communicate and handle information using ICT
  - use a range of ICT hardware and software efficiently to create good-quality presentations for particular audiences, integrating information from several sources
  - select appropriate ICT hardware and software to fulfil a specific purpose
  - be systematic and critical in their use of appropriate search methods to responsibly obtain accurate and relevant information from a range of sources
  - collect and edit quantitative and qualitative information for a particular purpose, and enter the data into a data-handling package for processing and analysis
  - interpret, analyse and display information, checking its accuracy and questioning its plausibility
  - consider the eSafety and ethical implications of sharing digital content with a wider audience
- program solutions to problems
  - understand that big problems can be broken down into smaller problems and the importance of managing complexity through abstraction
  - plan, develop, test and modify sequences of instructions and procedures to control and respond to events
  - identify the rules that should govern an interactive program
  - use selection in programming so that the program produces output determined by the input.

Throughout all assessment tests, learners should demonstrate the following:

- autonomous use of ICT hardware and software
- a consideration of the limitations of ICT tools and information sources, and the results they provide
- comparisons of the effectiveness of ICT with other working methods
- use of a range of ICT hardware and software to create good-quality presentations for varied audiences
- selection of appropriate ICT hardware and software to fulfil the assessment tests
- systematic use of appropriate search methods to safely obtain accurate and relevant information from a range of sources
- use of computational thinking to solve problems.

## Initial Steps modules

## Starting with Text (4269)

### Introduction

In this module, learners are introduced to text-/word-processing software to create and edit short pieces of text. The aim is to learn how to input text using the keyboard, to use the mouse to move around within the document, and to access features like print, save and spellcheck. They learn how to save and retrieve documents. They begin to understand how to use the software to improve the accuracy of their work.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Enter simple words, using keyboard or other input device	P	See below	Learners can use a keyboard to input a short piece of text (20–30 words) unaided – this could be their own original work or copied from given text. Additional words could be entered using a software word bank.
2 Select and edit text	P	See below	Learners should be able to select words, copy and paste words, delete words, add words and change words or punctuation within the text. To achieve this learning objective, learners need to be able to make changes to the text but are not necessarily able to spot errors themselves.
3 Select basic icons (e.g. print, save or spellcheck) using the mouse or other pointing device	P	A printout of learners' work covering the first three learning objectives (LO1–LO3), which they can use later to check for errors (LO5)	Learners should be confident enough with the software to be able to select icons such as save and print, and use the spellchecker (if available) without assistance. This learning objective is concerned with the learner's ability to find and select tools rather than knowing how to use them efficiently. Saving a document with an incorrect filename, or selecting an incorrect option from the spellchecker, should not prevent this LO from being awarded.
4 Name, save and retrieve documents	M	See below	Learners show that they can name and save a document in the appropriate place (e.g. portable storage device, USB memory stick or hard disk) and can retrieve it later, without the teacher's help, to make changes to it.
5 Use appropriate methods to check text is error free	M	Teacher evidence or printout	Learners use a combination of proof reading (on screen or printed) and a spellchecker (if available) to ensure that their final text has been checked and corrected, without the teacher's help.

## Getting started

Learners can use any word- or text-processing software for this module; however, it may be beneficial to choose software which is appropriate to the age and abilities of the learners, which could include audio support. Also, at this level, teachers might consider the use of software word banks as well as using other ways of inputting text, for example handwriting using a slate (electronic) or interactive whiteboard. If using software such as Microsoft Word or Pages in iWorks, it might be useful to change the toolbar options so that icons such as save and print appear as large buttons, and the menus and toolbars are limited to those that the learners will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that learners find it easier to link what they are typing with what they see on screen.

If this module is taught first, learners may need plenty of practice to become familiar with the keyboard and mouse, and may benefit from simple guidance about the safe use of the computer.

This is a good opportunity to introduce expectations about academic honesty. In particular learners should understand that it is not acceptable to copy-and-paste someone else's work and pretend it is their own.

Prior knowledge	New words	
<ul style="list-style-type: none"> <li>recognise simple words and characters</li> <li>understand the mouse controls the pointer</li> <li>write simple sentences</li> <li>use full stops and capital letters</li> <li>use a space to separate words in written text.</li> </ul>	<ul style="list-style-type: none"> <li>program</li> <li>software</li> <li>mouse</li> <li>cursor/pointer</li> <li>drag and drop</li> <li>screen/monitor</li> <li>keys/keyboard</li> <li>select</li> <li>space bar</li> <li>font</li> <li>caps lock</li> <li>ribbons/menus</li> </ul>	<ul style="list-style-type: none"> <li>edit</li> <li>delete</li> <li>print/printer</li> <li>icon</li> <li>text</li> <li>shift</li> <li>return/enter</li> <li>backspace</li> <li>copy/cut/paste</li> <li>highlight/select</li> <li>word bank</li> <li>word processing</li> </ul>

## Assessment guidelines

Both Pass and Merit learners are required to show that they can enter text and use the software to make changes to the text. However, in addition to this, Merit learners are required to demonstrate that they can save and retrieve their own work as well as show some ability to use the software independently to produce work which is error free, without assistance. Pass learners should, on the other hand, be showing competence using the software but may need prompting to spot errors or to retrieve previously stored work.

The assessment of this module might include a piece of text to copy, with errors included. After entering the text, learners could be instructed to change some of the errors within the text. The initial text, along with a printout of the learner's work, should then give sufficient evidence for the first three learning objectives. Merit learners would be assessed further, on being able to save and retrieve their work as well as on completing some independent error checking by themselves. You can enable them to achieve this either by asking them to spot and amend any remaining errors within the original text, or by providing them with a new document which they can retrieve and save as their own, implementing the changes necessary to make it error free.

## Starting Images (4270)

### Introduction

This module introduces learners to the use of graphics software for creating, editing and saving pictures, by giving them the skills to choose and use a number of simple graphical tools.

Learners will learn how to draw and modify simple pictures or patterns, using a combination of lines, simple shapes and fill tools: they will learn to select colours, shapes and line widths from a simple tool palette. They will use select, cut, copy, paste and undo commands to modify their work, and will save the finished picture.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use simple shapes and lines to create pictures or patterns	P	See below	Learners will not be expected to use the curved line or scribble tools at this stage. Learners are not expected to save their work at Pass level.
2 Edit pictures, using visual effects	P	See below	Learners should fill at least three of the white spaces with an appropriate tool, such as brush, spray and fill, to create colour effects, line textures or patterns.
3 Add details to an existing picture, using straight lines or geometric shapes	P	Printout of picture (and original given to learners)	Learners are not expected to make major changes, such as adding or deleting a character or object.
4 Copy or delete a character or object	M	Printout of final picture	For this level, learners should be able to edit substantially the original given picture, by selecting a particular object and either deleting it entirely (restoring the background), or copying and pasting it elsewhere in the picture.
5 Use 'save as' to store edited pictures	M	Teacher evidence or printout	The important thing is to demonstrate that the learner has been able to save with a new filename.



## Getting started

You may need to adjust or adapt the material if working with tablets.

You will need a graphics package with a range of tools and edit features. For whatever software you use, demonstrate how to use simple tools such as spray, pen and cut, and how to use 'undo' or other tools to correct a mistake. Show how to use 'save' or 'save as'.

Provide a range of stimulus material and opportunities for learners to edit/change pictures and to create their own pictures and designs. For example, ask learners to edit pictures to show/change emotions, such as happy/sad, etc. Ask learners to print out their completed pictures.

It will be helpful to collect a range of children's books with good illustrations, as well as artwork from other sources, for learners to see and discuss in preparation for making their own pictures.

You will also need to have several prepared files for learners to modify: these should be simple pictures, with plenty of white space which can be filled in by the learner, using the tools they have learned.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>graphics</li> <li>icon</li> <li>pencil tool</li> <li>brush tool</li> <li>spray tool</li> <li>fill</li> </ul>	<ul style="list-style-type: none"> <li>line</li> <li>texture</li> <li>save / save as</li> <li>select</li> <li>undo</li> <li>print</li> </ul>

## Assessment guidelines

Learners could be asked to draw simple pictures of, for example, a house with two windows and a door (mostly squares/rectangles), or a face or flower (mostly circles/ellipses and some lines). Alternatively, they might produce a pattern, using rows of coloured or patterned squares, circles or rectangles, each joined up to the next by a coloured line like a toy snake or caterpillar. (This allows learners to select combinations of shapes, to fill colours or patterns, and to select line thickness and colour.)

The pictures you provide for learners to modify should be simple, with plenty of white space for learners to fill in, and with opportunities for them to add details to the picture or remove details from it. Keep the demands of the task simple, by leaving plenty of space between the objects or shapes which learners need to modify or remove (so that they will not find it too difficult to select the shape or object that they need to edit). At Pass level, learners could be asked to add some extra coloured shapes and lines to a pattern or, for example, add a sun to a picture of a house. At Merit level, learners might remove, for example, an object or character and place it elsewhere in the picture.

## Starting Graphs (4271)

### Introduction

In this module, learners begin to understand how to use ICT to classify information and present their findings in the form of simple charts or graphs. Learners start to understand how they can use graphs and charts to answer questions or compare information.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Store and classify information	P	See below	Learners should be able to sort and classify properties of objects, e.g. sports played by classmates. They should be able to use ICT to create a tally chart or data table, or to enter the data into graph/chart software.
2 Present information in charts or graphs	P	Printout of graphs	Learners use the information they have entered to create two different but simple graphs or charts, e.g. pie, bar or pictogram. The teacher should prescribe which data is selected to present in the chart.
3 Use charts or graphs to answer simple questions	P	Learners' answers to set questions	Learners can answer specific simple questions from the graph/chart they have created, e.g. 'Which sport was the least popular?' or 'How many girls play tennis?'. It is important to construct questions so that learners can make different observations about the data for LO4 below.
4 Draw simple conclusions from charts or graphs	M	Teacher evidence or printout	Learners, unprompted by a specific question, can make at least two sensible, but simple, general statements or observations about the data from the graphs they have drawn, e.g. 'My charts show that basketball is the most popular sport', or 'More girls enjoy swimming than boys'.

## Getting started

Learners could use simple graphing or charting software for this module, for example Microsoft Excel or Numbers in iWorks. It might be useful to change the toolbar options so that icons such as save and print appear as large buttons, and the menus and toolbars are limited to those that the learners will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that learners find it easier to link what they are typing with what they see on screen. If this is the learners' first use of data-handling software, it might be appropriate to begin with pictograms, with one symbol representing one object, and to develop into other kinds of graph at a later stage.

If learners are using a spreadsheet to create different graphs, and they are new to this type of software, teachers could create a graph in advance, linking it to a table on the spreadsheet. The learners could then enter their own numbers into the spreadsheet table, so the data would automatically display as a graph. This could support learners in understanding graphs before they have to use the software to create their own graphs from scratch.

Learners may need to sort real objects to fully understand how ICT can be used to represent or classify objects; it may be necessary to organise the results into summary tables or tally charts, so that the learners can make sense of the information. You should support learners when they are creating graphs or charts, to make sure that they produce sensible graphs/charts. Keep data sets small, so that learners can easily check they have entered data accurately.

A useful starting point for this module is to ask what questions graphs can help us answer, and to look at questions which real-life charts and graphs have been designed to answer. Encourage learners to discuss which questions their own graphs could and could not answer. Such discussion will help the learners to understand why graphs and charts can be useful to answer real questions.

Encourage good practice: for example, checking information for errors, giving charts a title and labelling axes.

When practising what sort of conclusions can be drawn from graphs/charts, encourage learners to mention similarities as well as differences, so they develop an understanding that both are equally important observations.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>information</li> <li>pictogram</li> <li>icons</li> <li>collect</li> <li>sort</li> </ul>	<ul style="list-style-type: none"> <li>classify</li> <li>bar chart</li> <li>graph</li> <li>pie chart</li> <li>data</li> </ul>
<ul style="list-style-type: none"> <li>sort objects into groups</li> <li>use the keyboard and mouse to enter information into the computer</li> <li>understand simple data organised in a table or tally chart.</li> </ul>		

## Assessment guidelines

Both Pass and Merit learners should be able to enter some prepared data into a simple graphing software package or spreadsheet software with graphing facilities. They should be able to describe the data they have entered and to make statements like: 'This data shows how many children like different sports in our class'. All learners should be able to use the software to create two different charts from the data they have entered, and should be able to answer simple, specific questions, like: 'How many boys like athletics?'. Merit learners should be able to suggest which questions their charts could answer and which they could not. The learners should then generate and answer the questions. Also, Merit learners need to be able to show that they have an appreciation of what information the charts show in a real context, by making at least two sensible, general observations/statements from the charts they have created, such as: 'There is no difference between the sports preferred by boys and girls', or 'Tennis is the most popular sport'. Being able to identify and express a general statement (unaided) is a step further for the learner than answering specific questions, because it implies that the learner understands how to interpret what they see in the real context of what the data in the chart/graph is showing, rather than simply being able to read a value from a chart or graph.

A single screen capture or printout of the charts/graphs produced by the learners would be sufficient, if the learners have written their observations on these before or after printing.

## Starting Programming (4272)

### Introduction

In this module, learners begin to plan simple programs and then create them in Scratch by controlling the actions of a sprite (an on-screen character that can be programmed to move relative to the background) by giving it a sequence of instructions.

The pass level learning objectives guide learners through the design process. Firstly they analyse the specified objective and plan an approach to achieve it (e.g. to move a sprite to a particular location). Then they create a working program in Scratch that meets this objective. The final pass level learning objective is to be able to predict the output of another program by following its logic (rather than by observing it running).

The Merit learning objectives extend learning by asking learners to create more complex sequences of instructions and to begin to debug programs that are provided to them.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Plan a short sequence of instructions (an algorithm) to achieve a specified objective	P	Learner's flowchart	The sequence created need not be complex. The learner's plans should demonstrate how they have understood the objective and the intended structure of their program. The flowchart will be linear.
2 Create a program as a sequence of instructions to achieve a specified objective	P	A screenshot or images of the learner's completed code	The program should be developed in Scratch. The solution need not be a sophisticated program. Moving a sprite between two specified locations would be sufficient.
3 Predict what the sprite will do when given a short program as a sequence of instructions	P	Task sheet showing a provided program and the learner's prediction	For assessment, programs will be provided as a flowchart. Learners should make their prediction by working through the logic of the program.
4 Create a program that moves a sprite at least five times and turns it through angles of other than 90 or 180 degrees, to reach a specific target	M	A screenshot or images of the learner's completed code	For example, learners could program the sprite to move along a route, visiting certain locations and/or avoiding an obstacle
5 Correct (debug) a short program containing one error	M	Task sheet showing the provided program and the learner's correction of one error	For assessment, programs will be provided as a flowchart. Provide learners with a short program with one simple error to correct.

## Getting started

You will need Scratch. Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab and is available in several languages. See <http://scratch.mit.edu>

Before learners begin programming on screen, introduce algorithmic and logical reasoning through the use of physical (unplugged) activities, such as:

- activities involving instructions to get a friend from one place to another in the room, perhaps going around obstacles
- developing a set of instructions, possibly using a series of instruction cards, which learners can use with each other
- use board games and floor tiles to convey the notion of spaces and units
- if one is available, let learners drive a remote-controlled toy car around a course
- if you have a floor turtle, show learners how to give it instructions and then let them try out their own combinations of distance and direction instructions to see the effect.

Ensure that learners have experience of predicting what a sequence of instructions will do, and are able to predict what a sprite will do when it is given a simple program in Scratch. Learners should be able to justify their predictions.

Prior knowledge	New words	
Learners can	• sequence	• debug
• understand forward, back, left, right and turn	• order	• commands
• count	• instruction	• program
• estimate distances	• sprite	• prediction
• understand quarter, half and full turns and how these are expressed in degrees.		

## Assessment guidelines

Set learners the challenge of working out an algorithm (a sequence of instructions) to move the sprite from one location to another. Ask them to record their algorithm in a flowchart which shows the sequence of commands they would use.

Learners could then write a computer program to make a sprite follow the same path. This should include at least one turn of 90 or 180 degrees.

Provide learners with a similar scenario that has been prepared in advance. This should show the starting position of the sprite and a program of instructions (in a flowchart). Ask learners to predict the sprite's end position and to explain how they made their prediction.

Learners will achieve Pass level if they are able to complete the objectives up to this point. In order to achieve Merit level, they must successfully complete the second part of the task, which involves drawing a path from the previous end point to another destination on the plan: this should involve at least five moves, using angles other than 90 or 180 degrees.

In order to achieve Merit level, learners must also be able to debug a simple program. They will be given a program in the form of a flowchart, the starting position of a sprite and the intended end position. The program should only contain one error. The learners need to identify and correct the error.

## Starting Searches (4273)

### Introduction

In this module, learners are introduced to searching. They use the internet, CD-ROMs and/or eBooks to learn about different ways to access digital information and they begin to understand how to choose the most appropriate search technique. They understand the difference between menus and indexes and they can recognise and use different kinds of links and buttons.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use buttons, menus and indexes to search for and navigate to information	P	See below	Learners should be able to recognise and use back and forward buttons, hyperlinks, hot spots, indexes or menus to navigate and find information.
2 Use keywords to search for information	P	See below	Learners may be provided with the keywords but should be able to follow search results to find the information required.
3 Provide evidence of research undertaken	P	A printout of the answers to a set of questions which can include items to cover LOs 1–3	Learners demonstrate that they can use search techniques to answer questions. They should complete the searches on specified websites or on a CD-ROM.
4 Select appropriate keywords	M	See below	Learners are able to select their own keywords to find answers to specified questions, by searching for information on a CD-ROM or on the internet. The keywords chosen should enable them to follow an efficient and accurate line of enquiry.
5 Select appropriate results	M	Evidence from the learner of the keywords used and the best results of their searches	Learners are able to recognise relevant and irrelevant information/links from the results of their searches. They reject the irrelevant information and keep information which is connected to answering their search questions. They should also demonstrate their understanding that not all the information they find is accurate and trustworthy.

### Getting started

Any sources of digital information can be used for this module, such as CD-ROMs or information websites. Ideally, they could use a combination of many different sources.

However, when using the internet, it might be better to work within a selected website, so that learners are not baffled by excessive irrelevant material. You could place links to these sites in a starter page or on the desktop, so that learners do not need to have skills with the browser software.

If possible, encourage learners to find similarities in the way information is organised and accessed in different media. They should compare using a paper-based telephone directory with online telephone directories and directory software. They should compare using ICT-based searches to a practical search session using reference books. They should also compare organisational aspects in books, such as contents pages, indexes, glossaries, etc., with their electronic equivalents.

Searches for this level should have specific results as an end point (like an answer to the question 'When was someone born?'). Choose questions that will encourage learners to use a range of search techniques, with answers that are easily obtainable from the sources given to the learners.

At this level, the learners will probably benefit more if the sources are specified. Searching freely on the internet, or using search engines, is not recommended for this module. Specifying the sources reduces the likelihood of accessing undesirable material.

eSafety guidance should be given throughout this module. For example, learners should know to speak to a trusted adult if they feel unsafe or if inappropriate content is on their device. Further information can be found in section 5.

You can link this module with other areas of the curriculum, such as science, geography or literature, because learners benefit from having a reason for searching, so providing meaningful and real context is important.

Encourage exploration, experimenting and discussing findings in lessons. Integrate learning from this module into classroom practice as often as possible, so that learners relate the experiences to everyday situations. Discuss the reliability of the information found, and encourage discussions to help learners begin, in a very simple way, to evaluate the information that they find from various electronic and non-electronic sources.

Prior knowledge	New words
<p>Learners can</p> <ul style="list-style-type: none"> <li>• select icons</li> <li>• recognise an A–Z index and a contents list in a book</li> <li>• use book versions of an encyclopedia (or dictionary).</li> </ul> <p>If learners use the internet for this module, a simple explanation of browser software and how to use it would be appropriate.</p>	<ul style="list-style-type: none"> <li>• search / search engine</li> <li>• CD-ROM</li> <li>• menu</li> <li>• index</li> <li>• keywords</li> <li>• hot link / hot spots</li> <li>• hyperlinks</li> <li>• homepage</li> <li>• eSafety</li> </ul>

## Assessment guidelines

For this module, all learners should be able to search a CD-ROM or website, following a straightforward line of enquiry to find answers to specified questions. They can distinguish between, and know how to find information, using indexes and menus, and they know how to perform a keyword search. Merit learners, however, are able to search more freely and will create their own keywords to search about a topic. They will also be able to recognise and reject irrelevant or inappropriate results of searches, but may keep too many or too much information from the useful results.

To assess this module, you can give learners a simple worksheet with some questions to answer from a specified website. You may specify the types of searches, but Merit learners will be expected to find information more freely. Evidence for this would be a completed worksheet. For Merit learners, ask further questions and expect them to provide both the keywords and the results of their searches, which could be answers to the questions they have been set, or further relevant information about a topic.



## Starting Email (4274)

### Introduction

In this module, learners are introduced to email. The aim is for learners to understand how to use email software to write and send messages, and to collect, read and reply to messages. Learners start to experience some of the advantages of email, such as easy and quick communication, and enabling messages to be sent almost immediately over large distances. Learners begin to understand the main features of email software.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and send email messages	P	You may provide separate printouts for LOs 1–3, or one printout which shows an original message, a reply to the learner and a further reply from the learner	Learners should be able to access the email software and use it to create a new message. They should be able to type in a given email address correctly and add an appropriate subject line. They should be able to use the email software to send the message.
2 Reply to email messages	P	See below	Learners should be able to use the email software to reply to a message they have received. (This should be achieved by using a reply button rather than re-typing the address.) The subject line will read 'Re: ...'.
3 Collect and read email messages	P	See below	Learners should be able to use the email software to check for new mail. They should be able to identify, access and read new messages. They should be able to understand where to look on the email to find out who sent the mail and what it is about (address and subject lines).
4 Use email folders	M	See below	Learners should understand how/where email software stores messages, e.g. the default folders like inbox, outbox, sent folder, drafts, deleted items / trash, etc. Learners know how/where to find or access stored emails in these folders.
5 Forward email messages and copy to another recipient	M	Printout of email which has been forwarded and copied (This covers LOs 4 and 5 if the message to be forwarded and copied is one they have had to retrieve from, e.g. their sent folder)	Learners can use the email software to forward and send a carbon copy (cc) email to another recipient. They understand the difference between forward, reply and carbon copy (cc), and when they should be used.

## Getting started

Any email software can be used to complete this module, for example Microsoft Outlook or web-based email.

Learners are not expected to be able to set up their own email addresses/accounts and, to reduce the work in setting up and managing multiple email addresses, learners do not need individual email addresses to complete this module, as long as they have sufficient addresses within a teaching group to be able to send and receive emails. Extra care with the subject line should mean that learners can share a single email address successfully.

To help learners to appreciate the advantages of email communication, it would be useful if some messages could be sent over distance (for example, to a school in another district or country). Care should be taken to explain to learners how communications with the partner school are safe. For initial classroom practice, it would be ideal if learners could be given addresses of others in the same group, so that replies can be received quickly. Learners should compare email to other forms of communication – this links to history, in terms of the development of communication technologies, as well as language.

For schools on a network, it may not be obvious to learners that an internet connection is necessary to send and receive email; you might need to mention this, so that learners do not assume that every machine will send and receive emails without an internet connection. Conversely, if learners are using mobile phone email systems, they may need your assistance to connect and disconnect, in order to send and receive emails (learners' ability to do this is not assessed in this module). Similarly, the login procedure for different email systems often varies in complexity, some requiring username and password identification. As this is not assessed at this level, learners can receive your help to access the email software. However, learners are expected to understand that they have an email address which identifies their mailbox (even if this is a shared one).

Setting the 'include message in reply' option in the email software may reduce the burden of printing sequences of emails for assessment and moderation.

Learners only need a broad understanding of the email software at this level, so keeping the folders to just the default options like sent, inbox, drafts and deleted items/trash, should make it easier to understand.

### eSafety notes

We recommend that schools have an acceptable-use policy regarding email/internet use. This should be explained to learners at an appropriate level of detail before they use email. An emphasis should be placed on the importance of using suitable language, of only replying to messages from known senders and of only opening identifiable attachments or hyperlinks. Learners should be given guidance on the expected behaviour if they feel unsafe or if inappropriate content is received via email. Expected behaviour would include that learners should speak to a trusted adult as soon as they experience anything which causes concern. If web-based email is being used, carry out appropriate measures/screening to ensure that unsuitable emails are not accessed by the learners. Further information can be found in section 5.

It is also advisable that learners copy the teacher into their emails, using this to explain the function of the cc option. This will help the teacher to monitor the learners' email use, as well as ensuring that emails being sent are not inappropriate.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>email</li> <li>email address</li> <li>connect</li> <li>inbox/outbox/sent items</li> <li>carbon copy (cc)</li> <li>subject line</li> </ul>	<ul style="list-style-type: none"> <li>eSafety</li> <li>online/offline</li> <li>send</li> <li>receive</li> <li>reply</li> <li>forward</li> </ul>

## Assessment guidelines

Both Pass and Merit learners need to be able to use email software to write, send, receive, read and reply to messages. They should be able to use email addresses stored in an address book and understand the key parts of the email message such as To, Subject, Message, From and carbon copy (cc). In addition, Merit learners are expected to understand a little more about how the email software stores messages in folders such as the inbox, sent folder and deleted items/trash, so that they can find previously stored messages. Merit learners are also expected to be able to carbon copy (cc) and forward messages to other addresses.

On a more general note, Merit learners should be able to complete their emails correctly (including the subject line) and on a first attempt, whereas a Pass learner might take more than one attempt to get the email address correct, or might forget to complete the subject line but still send a successful message.

At this level, learners do not need to be able to create or manage their own email account, to login with passwords, or to understand how to connect or disconnect a dial-up connection.

Although it is not assessed directly, there is an underlying expectation that all learners know that a computer must be connected in order to send and receive email, and that emails can be sent over any distance in the same time frame. All learners are also expected to understand that an email address identifies where the mail goes but, unlike written postal addresses where a small error in an address might not stop a letter being delivered, a small error in an email address will result in the mail not being sent/received.

To assess this module, you could give learners a task to write and send a simple email to a given address, to ask for some information, such as: 'What is your favourite sport/music?'. They should wait for and read the reply. They should then reply in turn, to thank the other person.

Merit learners could be asked to find their first message (or another), forward it to another given address and send a carbon copy (cc) to you.

If the 'include message in reply' option has been set in the email software, evidence of the final message in each case (one for Pass and one for Merit) should be sufficient, because this would include/show all the previous messages. This evidence could be in the form of a screen capture, a printout or a saved email file produced by you.

**Initial Steps Learning Objectives Record Sheet**

Learner Name .....

Learners must achieve all Pass learning objectives to gain a Pass.

Learners must achieve all Pass and Merit learning objectives to gain a Merit.

*For an explanation of each learning objective, please see the amplification section of the relevant module.***Stage 1**

Learner was able to:	Pass/Merit	Please tick
<b>Starting with Text (4269)</b>		
Enter simple words, using keyboard or other input device	P	
Select and edit text	P	
Select basic icons (e.g. print, save or spellcheck) using the mouse or other pointing device	P	
Name, save and retrieve documents	M	
Use appropriate methods to check text is error free	M	
<b>Date of assessment</b>		
<b>Starting Images (4270)</b>		
Use simple shapes and lines to create pictures or patterns	P	
Edit pictures, using visual effects	P	
Add details to an existing picture, using straight lines or geometric shapes	P	
Copy or delete a character or object	M	
Use 'save as' to store edited pictures	M	
<b>Date of assessment</b>		
<b>Starting Graphs (4271)</b>		
Store and classify information	P	
Present information in charts or graphs	P	
Use charts or graphs to answer simple questions	P	
Draw simple conclusions from charts or graphs	M	
<b>Date of assessment</b>		

## Stage 2

<b>Starting Programming (4272)</b>	
Plan a short sequence of instructions (an algorithm) to achieve a specified objective	P
Create a program as a sequence of instructions to achieve a specified objective	P
Predict what the sprite will do when given a short program as a sequence of instructions	P
Create a program that moves a sprite at least five times and turns it through angles other than 90 or 180 degrees, to reach a specific target	M
Correct (debug) a short program containing one error	M
<b>Date of assessment</b>	

<b>Starting Searches (4273)</b>	
Use buttons, menus and indexes to search for and navigate to information	P
Use keywords to search for information	P
Provide evidence of research undertaken	P
Select appropriate keywords	M
Select appropriate results	M
<b>Date of assessment</b>	

<b>Starting Email (4274)</b>	
Create and send email messages	P
Reply to email messages	P
Collect and read email messages	P
Use email folders	M
Forward email messages and copy to another recipient	M
<b>Date of assessment</b>	

Please sign and date this form when the learner has demonstrated, through an assessment test, that he/she can achieve the learning objectives of each module at Pass or Merit level without any additional assistance.

Teacher.....

Date .....

## Next Steps modules

## Exploring Documents (4278)

### Introduction

In this module, learners begin to expand their word-processing skills, so that they are able to add images to documents, change the style, size or colour of text, and begin to understand how to arrange items on the page. They can use the software to refine their work, and they start to understand how they can alter the look of a document to make it appropriate for a particular audience. They know how to save and retrieve their work. They understand how to use the software to improve the accuracy and quality of their work.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and edit a text document	P	See below	Learners should be able to input a few paragraphs of text, and use the software confidently to make amendments to words or phrases (the work may contain a small number of errors). Learners can save and print their document.
2 Edit text for a specific audience	P	See below	Learners should be able to change the look of the text, including font style, size and colour, to make it suit a specific audience. The changes they should make can be specified in the assessment.
3 Add images or other objects to a document	P	Printout of document	Learners should be able to insert an image (or other object, e.g. a chart) into an appropriate place within a document. They do not need to be able to control how the text wraps around the image, but they should be in control of where the image is placed.
4 Refine and organise the layout of a document for a specific audience	M	See below	Learners work on the whole document and reorganise the contents and/or change the formatting, so that it is more suitable for its target audience. The changes they make should not be specified in the assessment, but the content they receive should lend itself to reorganisation and refinement. Learners should be able to spot and correct errors.
5 Evaluate a finished document	M	Teacher evidence or printout	Learners should be able to evaluate their own work and judge its suitability for a specific audience, e.g. whether the layout is clear, or why they have chosen certain options within the document.

## Getting started

Any word- or text-processing software can be used for this module. However, it may be beneficial to choose software which is appropriate to the age and abilities of the learners, such as children's text-processing software. If using Microsoft Word or Pages in iWorks, it might be useful to change the toolbar options so that icons such as save and print appear as large buttons, and the menus and toolbars are limited to those that the learners will need to use. It may also be useful to change the default font to a large and easy-to-read font type, so that learners find it easier to link what they are typing with what they see on screen.

Making learners aware of the white space left on a page is a good way to start them thinking about page design, and to encourage them to experiment with the layout of items on the page. Showing them how to set the screen view to show a whole page in print view will support this design aspect.

Learners will be more likely to appreciate how to make a document appealing to a particular audience if they understand the needs of the audience they are given. For example, they will be able to understand easily how font size and colour could be altered to suit young children, whereas they might find it difficult to know how to make a document look 'professional'. They should begin to discuss the needs of different audiences with you and with each other.

Learners should practise producing documents with a different look and feel, and then discuss what sort of things make the document good for different purposes. This will help the learners to understand how to create different looks, as well as being able to physically make the changes. Developing these discussions will also help learners understand how to evaluate their work. This is a good opportunity to reinforce expectations about academic honesty and the importance of editing text to make it their own work or adding a reference to the original author (for example including the name of the author/poet).

Prior knowledge	New words	
Learners can	• audience	• format
• demonstrate the skills described in 'Starting with Text'.	• insert	• save as
	• proofread	

## Assessment guidelines

Both Pass and Merit learners are required to show that they can enter text and use the software to make changes to the text, and to insert images. All learners are expected at this level to be able to save, retrieve and print their work. However, in addition to this, Merit learners are required to demonstrate that they can refine the way the text and images appear on the page, to make the document more appealing and appropriate for its audience. Merit learners should also be able to talk or write about their choices in the way the document looks. For example, 'I have made the title bold and centred it, so that it stands out. I think this makes the document easier to read.' All learners should be able to produce documents which are mostly without error.

For assessment of this module, you could provide learners with a piece of text to copy (around 100 words: two or three paragraphs, or a poem with several verses). The paragraphs could be in the wrong order, and there could be a few deliberate errors included, so that learners are encouraged to check their work for spelling and other errors. After entering the text, learners could be instructed to amend the size, colour and style of the font, so that it is better suited for its audience (the document could be a poem for children, in which case large text and bold colours and an easy-to-read font would be ideal). Learners could then be asked to insert an image (or images) from a selection prepared for the document (so that time is not lost during the assessment searching for suitable pictures). The image(s) could relate to a particular part of the text, so that learners can demonstrate they are in control of where the image(s) is/are placed. Merit learners would need to be assessed further, on being able to refine the way their document looks, rearranging the text and images so that the document looks good and better suits its audience. Merit learners should also be able to evaluate their document, for example, being able to talk or write about the choices they have made, and why that makes their document better or worse.



## Exploring Images (4279)

### Introduction

In this module, learners develop their skills in creating and developing pictures and designs, using a variety of graphical tools and saving their outcomes in digital form.

You should give learners opportunities to import and edit images from a range of sources – such as clipart, graphics packages, the internet and, if available, scanners, digital cameras, mobile phones or digital microscopes – and to use these to create their own designs. In doing this, they will be expected to create repeating patterns or effects (such as texture, mosaic and tile) by using stamps and/or copy tools. They will need to use a variety of brush sizes, shapes and effects and to create patterns using the symmetry tool (flip vertically/horizontally, rotate). They will also need to be able to select appropriate areas of an image, then to copy and resize them.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create repeating patterns, using stamps and/or copy tools	P	See below	The picture or design should include image(s) imported from at least one of the following sources: clipart, internet, scanned image, digital camera/mobile phone/microscope image or another saved image source. The repeating pattern can be created by using stamps, or by copying images imported into the picture.
2 Create pictures, using a variety of tools and effects	P	Printout of picture or design	Learners use at least three different tools, including the symmetry tool, and two different brush sizes/effects.
3 Select appropriate objects, copy and resize them	M	See below	Learners select, copy and resize object(s) to add to the design or picture. They save draft versions to show the changes they have made (for LO4).
4 Save drafts showing the development of the design	M	At least two saved and printed versions of the work, showing the development from first to final draft	It will help if learners are told to include the phrase 'version1/2/3' or 'first/next/final draft', as appropriate, when saving their work.

## Getting started

You will need a graphics package with a range of tools and edit features, ideally including symmetry tools and different brush sizes or effects. (The drawing tools within Microsoft Word would be sufficient for this module.) You can link this module with other subjects, in particular art and design.

You will also need a resource bank of images. These could be from a clipart pack, or images which you have prepared using a scanner or digital camera, mobile phone or digital microscope, or you could direct learners to a suitable source on the internet. You should include discussion of copyright during this module, to help learners develop awareness of their own and people's rights over the images they are using. The important factor here is that learners must bring in images from other sources.

If you can also provide a scanner and/or a digital camera or digital microscope for learners to use, this will be a much richer experience for them, but it is not necessary for completion of the module.

Provide a range of stimulus material, such as wrapping paper with repeating patterns, posters and advertisements from magazines. You will also find it helpful to have a pre-prepared bank of suitable images for the learners to import. Demonstrate the use of the appropriate new tools and commands, using images from the resource bank, and ask learners to use these to create their own designs.

If you have a scanner, provide examples of artwork using scanned images. Demonstrate how to use a scanner, then ask learners to use scanned images in their own designs.

If you have a digital camera, demonstrate how to use the camera and how digital images can be imported and edited. Teachers should discuss the importance of obtaining a person's consent prior to taking a photograph of them and when it is appropriate to share an image with others. Ask learners to use an image they have taken with the camera in a simple design. Similarly, a digital microscope can capture interesting images from objects which can be imported and edited.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>crop</li> <li>resize</li> <li>scale</li> <li>brush</li> <li>mobile phone</li> <li>tablet</li> </ul>	<ul style="list-style-type: none"> <li>import/export</li> <li>scanner</li> <li>digital camera</li> <li>horizontal</li> <li>vertical</li> <li>digital microscope</li> </ul>

## Assessment guidelines

You could ask learners to create a design for a particular theme such as 'autumn', 'sports' or 'happiness'. This would give them the opportunity to use scanned images (for example leaves for 'autumn', clipart or digital photos for 'sports').

The examples you provide for learners to discuss and work on during the module are very important in preparing them for assessment. Choose a title or theme which will not only allow learners opportunities to use rotations or reflections as part of their design, but will also encourage it. You can help by giving them a wide variety of sample material illustrating the use of relevant tools and techniques, and by including discussion of the work of artists and designers which particularly demonstrate creative use of image and pattern.

## Exploring Spreadsheets (4280)

### Introduction

In this module, learners are introduced to spreadsheet software. They learn to enter data, text and formulas into cells. They can copy data, replicate formulas and understand that spreadsheets carry out calculations automatically. They can use spreadsheet software to create graphs or charts. They begin to understand the power of spreadsheets for modelling situations, and how data and formulas can be modified to test predictions, or to work out what happens when something is changed.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Enter labels and numbers into a spreadsheet	P	See below	Learners should be able to enter text and data into spreadsheet software to create a working spreadsheet. This can be a copy of a spreadsheet supplied by you, to which learners are asked to add items.
2 Enter and copy simple formulas	P	See below	Learners should be able to enter simple formulas like =A1+A2. They should be able to use the SUM function to total a range of cells. (Note: This should involve creating the SUM function and not just using AutoSum from the toolbar.) They should be able to copy a formula to another location. The assessment may prescribe which formulas to put where.
3 Create a graph	P	Printout(s) of completed spreadsheet with graph and formulas displayed	Learners can select a given range of data and use it to create an appropriate graph. Learners give the graph a meaningful title, but the axes may not be labelled or referenced correctly.
4 Modify data	M	See below	Learners are given some data to change in their spreadsheet (which will affect both data and formulas). Learners manage to change the data and make appropriate checks to make sure that their spreadsheet still works.
5 Use a spreadsheet to answer a modelled scenario ('what if')	M	Printout of the learner's answer to the modelled scenario and the modified spreadsheet	Learners need to demonstrate an understanding of the effect of changing data and should be able to answer questions to modelled scenarios, such as: 'If the cost goes up by ... would there still be a profit?'. LO4 is about the learner being able to make the changes, while LO5 is about the learner's understanding of the implications of those changes, e.g. using the ability to change or modify a spreadsheet to answer questions.

## Getting started

Any spreadsheet software can be used to deliver this module, including Microsoft Excel or Numbers in iWorks.

Learners will need to understand the layout and features of a spreadsheet, and how to move around and enter text and data into cells. You may give learners partially prepared spreadsheets.

As a matter of good practice, encourage learners to use titles/labels to describe the data in the rows and columns of the spreadsheet. It may help learners initially if they practise moving round the spreadsheet and colouring certain cells to make a flag pattern. This will support their use of correct cell references and emphasise the difference between word processors and spreadsheets.

Learners will benefit from practising on spreadsheets which have a meaningful context. It is advisable to explain fully what information a spreadsheet displays, as this is not always obvious to a learner. Encouraging learners to discuss with each other what a particular formula is doing will help them to understand the spreadsheet they are creating.

Learners may need some extra support when creating formulas. They may also benefit from understanding how formulas change when they are copied to a new location. Show learners the 'show formulas' option to assist in checking formulas.

You can link this module with other subjects like mathematics and science, where, for example, spreadsheets can be used for solving formulas by trial and error. Learners could link this to learning multiplication tables and exploring number patterns in mathematics or interpreting the results of investigations in science.

You should encourage learners to test their spreadsheets and check their formulas.

Prior knowledge	New words	
Learners can <ul style="list-style-type: none"> <li>• use mathematical formula and present data in graphs</li> <li>• copy and paste</li> <li>• use the keyboard to enter text and data efficiently</li> <li>• retrieve stored work</li> <li>• demonstrate the skills described in 'Starting Graphs'.</li> </ul>	<ul style="list-style-type: none"> <li>• spreadsheet</li> <li>• cell</li> <li>• formulas</li> <li>• sum</li> <li>• calculate</li> <li>• rows</li> <li>• function</li> </ul>	<ul style="list-style-type: none"> <li>• columns</li> <li>• replicate</li> <li>• data</li> <li>• model</li> <li>• 'What if'*</li> <li>• total</li> </ul> <p>* This does not refer to the IF function</p>

## Assessment guidelines

Both Pass and Merit learners should be able to enter text, data and simple formulas into cells, to complete a spreadsheet with a good level of accuracy. They can copy data and formulas to new locations. They should understand what the spreadsheet shows and be able to produce a graph or chart of a selected range of data. In addition, Merit learners should be able to modify both data and formulas to change what the spreadsheet shows. They should be able to modify the spreadsheet to answer questions of the type 'What if...?', for example, 'What if 10 more people go on the trip, how much will the new total be?'

Merit learners are expected to be more aware of the accuracy of their spreadsheet, and will check for errors or ask for help to correct them.

For assessment of this module, you may provide learners with a partially completed spreadsheet for a real-life situation, such as the items and costs of food and drinks for a class party. Learners enter the remaining data and formulas to complete the spreadsheet. They produce a graph which shows some information from the spreadsheet. Merit learners may be asked to predict the effects of changing one aspect of the spreadsheet, and then test out their prediction. Evidence can be in the form of screen captures or printouts of the completed spreadsheets (one for Pass level and a further one showing changes made for Merit would be sufficient).

## Exploring Databases (4281)

### Introduction

Learners will already have carried out searches for information for their work in the Initial Steps module 'Starting Searches'. In this module, learners will learn about the usefulness and basic structure of databases, how to enter and edit data in databases, and how to use them to search for and sort information. They should also discuss which questions a selected database would help them to answer, and which it would not. This will help them consider the design of database structures.

In working on this module, learners ought to have experience of the kinds of data entry they will meet in the real world, i.e. 'forced choice', using button selection or drop-down menus, as well as 'open' entry, where any text or numeric field values may be keyed in. (In using internet-based databases to find information, learners will encounter such drop-down menus, as well as being asked to provide key words or phrases. Experience of varied forms of data entry will also help learners who progress to designing databases in the On Track module 'Databases for a Purpose'.) It is important to consider internet safety when using internet databases and how to protect their personal information (see section 5).

Real databases may contain a lot of information and, although it is not assessed specifically in this module, learners should be shown how bar charts and pie charts can help us to understand some of the key features or patterns in this information more effectively than looking at lists of values.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Add new records to a data file	P	Printout of additional records, with errors identified by the teacher	Learners can enter numeric and text data into a database with a predetermined structure, making no more than three errors in entering five additional records.
2 Identify field types	P	Written answers by learner	Learners can identify at least two different field types in the database.
3 Use 'equals', 'more than' and 'less than' in searches	P	Written answers by learner	In order for this to be feasible, in a database of 20 records, the result of such a search should be no more than three records for a question of the type 'Which characters have height greater than x metres?'.
4 Rephrase a given question in terms of search criteria	M	Printout or screen capture of search criteria used	Learners answer a real-life question from their databases by turning their questions into suitable database search criteria.
5 Interpret data	M	Copy of question and learner's answer to it	Learners should give a written description of the results of sorting and searching data in response to a question. The answer is likely to be one or two sentences, plus a short list giving relevant values, if appropriate.

## Getting started

You will need a database package with a range of tools and edit features.

You will also need to provide a prepared database, ready for learners to add files and edit records.

In this age group, many learners are interested in electronic games and card collecting, and both these kinds of activity involve information about various key features or qualities of characters. Suitable collections of cards could provide an interesting starting point, allowing learners to use 'real objects' (i.e. the cards) to look at grouping, sorting and classifying before they move on to a database. They will also begin to realise how much easier it is to find information when it is organised by agreed features (i.e. fields and field values).

Alternatively, you could get the class to add to a database about their hobbies or favourite books, about the performance of sports teams, or one based on the characters of a popular story or television series.

It is important for learners to have readily accessible sources of information to complete the database, and for them to find the subject matter interesting, so that entering data does not become a chore.

For learners to be able to turn real-life questions into search criteria for retrieving information from a database, they will benefit from practice and from seeing examples of how real-life databases are used. For example, how does the school librarian find out whether a book is loaned out or who has borrowed it?

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>• database</li> <li>• field</li> <li>• record</li> <li>• file</li> <li>• sort</li> <li>• order</li> </ul>	<ul style="list-style-type: none"> <li>• query</li> <li>• INCLUDES</li> <li>• AND</li> <li>• OR</li> <li>• NOT</li> <li>• subset</li> </ul>

## Assessment guidelines

Learners use their skills in entering data in the correct field, searching and presenting information. They will work with a minimum of six field names. Some of these fields could have yes/no values; some could have up to six pre-set values. The data will be suitable to ask a range of questions, so that they can generate sufficient evidence for all the learning objectives.

Some database packages make it easy to view and enter all the information in a table format (like a spreadsheet), rather than using a data-entry (record card) layout for each record. The database for learners to use in the assessment of search skills will be large enough to ensure that learners would be unlikely to identify all relevant records/field values simply by looking at all the records, without carrying out appropriate sort or search commands first.

All learners are expected to be able to recognise different field types, enter new records and search for specific information from within the database. In addition to this, Merit learners are expected to be able to answer real-life questions from a database by turning these into suitable search criteria and interpreting the results they retrieve.

Most of the learner's effort in carrying out the task will be in formulating appropriate search criteria, rather than writing down (or printing out) lengthy reports on the results of searches.

## Exploring Programming (4282)

### Introduction

This module builds on the Initial Steps module 'Starting Programming'. Learners develop their programming skills by introducing repetition. Merit learners also need to demonstrate using decomposition and procedures.

Assessments will assume knowledge of Scratch.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Plan an algorithm involving repetition to draw a simple shape or pattern	P	Learner's flowchart	The learner's plans should demonstrate how they have understood the objective and the intended structure of their program. This plan should be in the form of a flowchart.
2 Create a program using repetition to produce a simple shape or pattern	P	A screenshot or images of the learner's completed code	The program should be developed in Scratch. Learners should create the design (e.g. a flower pattern) by creating a simple shape and rotating it. They should be able to write accurate instructions to create the basic shape and to duplicate it to form the pattern.
3 Predict the output of a program that includes repetition	P	Task sheet showing a provided program and the learner's prediction	For assessment, programs will be provided as a flowchart and will produce a simple shape. Learners should make their prediction by working through the logic of the program.
4 Plan an algorithm to draw a complex shape or pattern, using decomposition	M	Learner's flowchart	Their plan should be in the form of a flowchart and should demonstrate how they have used decomposition to break the complex shape or pattern into its composite parts. The intended structure for their program should include at least one procedure.
5 Create a procedure and use it in a program to draw a complex shape or pattern	M	A screenshot or images of the learner's completed code in text or blocks	Note: in Scratch, procedures are 'custom blocks'.



## Getting started

You will need a simple on-screen programming environment, such as Scratch, which includes support for custom procedures. Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab. See <http://scratch.mit.edu>

Give learners the experience of writing algorithms and drawing simple shapes on paper before they attempt similar shapes as programs on screen. To do this, learners will need graph paper, rulers and set squares or protractors. Provide learners with some simple example programs and ask them to use logical reasoning to predict the output of the program. They should be able to give an explanation for their prediction. Allow learners the opportunity to test their predictions.

You will need to teach learners how to clear the screen and to use the penup/pendown commands before they can draw some letters or shapes.

Give plenty of opportunities for learners to see how changing numbers within the commands affects the final path of the sprite. Provide a worksheet with simple repeating sequences and ask the learners to use logical reasoning to predict what shapes they will produce. Set simple challenges such as 'draw a square, then draw a smaller square next to it'. Ensure learners can build a repeat loop to create a simple regular shape (square, pentagon, hexagon, etc.).

Merit learners need to learn how to create a procedure (custom block or function) to draw part of a more complex shape. They should be given quite complex shapes on task sheets to replicate on screen, by first identifying the base shape from which the more complex shape has been made.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>• procedure</li> <li>• repetition</li> <li>• clear</li> </ul>	<ul style="list-style-type: none"> <li>• decomposition</li> <li>• abstraction</li> </ul>
<ul style="list-style-type: none"> <li>• demonstrate the skills described in 'Starting Programming'</li> <li>• describe the angles and the properties of regular polygons.</li> </ul>		

## Assessment guidelines

Both Pass and Merit learners need to show that they are able to plan an algorithm and implement this as a program to draw simple shapes in an on-screen programming environment. All learners also need to be able to use repetition in their programs. All learners should be able to read a program and predict its output.

In addition to this, Merit learners need to be able to use procedures to abstract the instructions for drawing parts of their shape or pattern. The shapes or patterns drawn by Merit learners will be more complex.

## Exploring the Internet (4283)

### Introduction

In this module, learners build on their searching skills, so that they are able to make use of the internet for information gathering. They also learn how to use standard features of browser software in order to help collect, store and retrieve information. Learners should be able to recognise links and navigation options on a webpage, and be able to use them to find the information they need. The aim is to give learners sufficient skills to be able to use the internet safely and efficiently for simple information gathering. Learners should start to identify by themselves which search results are useful and which should be rejected.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Use internet tools to find information	P	See below	Learners are able to use a web browser and one or more search engines to retrieve information. They should be able to filter information, e.g. by country, and refine their searches to find relevant material.
2 Evaluate relevance and usefulness of material	P	See below	Learners are able to check information to ensure it is relevant and useful, discarding any other information – but they may keep more useful information than they need.
3 Store and retrieve information	P	See below	Learners are able to use a variety of means to store information they have found for future use. They are able to: <ul style="list-style-type: none"> <li>• save a web page and view it later</li> <li>• use the browser software to print a web page</li> <li>• bookmark a site and view it later.</li> </ul>
4 Copy and paste information from a website	P	A completed question sheet from the learner or a printed copy of learner research, annotated by the teacher, to provide evidence for all criteria	Learners are able to use the browser software to select, copy and paste useful text into another software package or document.
5 Save URLs and objects from a website	M	See below	Learners are able to use copy and paste to copy URLs into another document or email. Learners are able to save single objects, such as images from a webpage, for their own use.
6 Use extended search skills	M	Learners create a short document or email, including two or three of the best results of their search, a copied link and an image. Evidence could be a printed copy of this document or saved email file	Learners are able to work independently, using the practical skills they have acquired to gather simple, useful information about a topic. They are able to present their findings in another document. The findings at this level should be relevant, but not necessarily organised or reworded.

## Getting started

Any browser software can be used for this module, and learner machines will also need to have connection to the internet. A text application of some sort, such as Notepad or Microsoft Word, is also required so that learners can copy and paste their search results into a document.

Learners should understand how the internet functions, so that they can appreciate things like how URLs work as addresses, and why some information may not be useful or trustworthy. You should also teach them about issues relating to internet safety and copyright.

## Copyright issues

This will vary from country to country but you should make learners aware, at an appropriate level of detail, of any ruling which may affect what they are able to copy and how they can use it. Guidance should be given to learners on how to search for media which they can modify and/or reuse. Also, encourage learners to be academically honest and not plagiarise whole portions of text which they have gathered from the internet. They should rephrase the information in their own words to demonstrate their own understanding.

## eSafety notes

We recommend that schools have an acceptable-use policy regarding internet use. This should be explained to learners, at an appropriate level of detail, before they use the internet. Similarly, appropriate screening/filtering should take place to ensure that learners do not access unsuitable sites or inappropriate content.

It is very important that learners understand how to keep themselves safe when using the internet and guidance should be given to outline the expected behaviour if learners feel unsafe, this will include them speaking to a trusted adult. Our learners come from different cultures and backgrounds, and from a wide range of age-groups. Teachers will know best which aspects of this subject are relevant and appropriate to be included within their curriculum. As examples however, teachers could consider learners' sharing personal information, their digital footprint, cyber-bullying, the accessing inappropriate/fake content and ethical behaviour as important matters for discussion. Teachers may like to view this website: [www.thinkuknow.co.uk](http://www.thinkuknow.co.uk) and use it as a teaching resource with their learners, if they think it is suitable. Further information can be found in section 5.

For schools on a network, it may not be obvious to learners whether an internet connection is active when they try to connect. You might need to mention this, so that learners do not assume that every machine will be able to connect to the internet automatically. Conversely, if learners are using a machine with a dial-up connection, they may need your assistance to connect and disconnect in order to work on the internet (learners' ability to do this is not assessed in this module).

This module may be linked with other areas of the curriculum such as science, geography or literature, because learners benefit from having a reason for searching, so providing a meaningful and real context is important.

Search engines can be difficult to use if a topic or question is ambiguous or has several different interpretations – 'surfing' can mean either surfing a webpage or surfing on a surfboard! Take care, therefore, with research topics, so that learners do not have to sift through too many irrelevant items before they find good information. You could try out various ideas first and see which topics produce fairly simple lines of enquiry from the search engine they will be using. Learners are not being assessed on their ability to generate their own lines of enquiry, so the questions and research topics should not be too open-ended. Learners need to be clear about the information they are looking for. It is their ability to find and use relevant information which is more important at this level. However, you should encourage exploration, experimentation and the discussion of findings in lessons.

Prior knowledge	New words	
Learners can	• search engine	• bookmark
• demonstrate the skills described in 'Starting Searches'	• internet	• FAQ
• copy and paste	• www	• copyright
• recognise and use navigation options on webpages, such as hyperlinks.	• URL	
	• academic honesty	
	• ethical behaviour	

### Assessment guidelines

Both Pass and Merit learners are required to show that they can use browser software and navigation options on webpages to view information on the internet. They should also be able to use the browser software to store, retrieve, bookmark and print useful pages for future use. They should understand that printing out a whole site is frequently a less productive approach to finding information. They should also be able to copy and paste selected portions of text into another document. They should be able to copy and paste images and remove the hyperlink if appropriate. Learners should be able to experiment with keywords when using a search engine to find information, and should also be able to spot useless information and reject it. However, they may keep more information than they need.

Merit learners are able to work independently to collate results of a search in a separate document. They have the beginnings of an organised method of working, but may have too much information, and it may not be reworded or fully organised. Merit learners are also expected to be able to copy links from webpages, and to save objects such as images for their own use.

Assessment of this module might include a general research topic, like volcanoes, as the theme. You could assess skills in LO1 by asking the learners to answer questions from a link to a specific website on volcanoes. A further question could provide evidence for LO2, and the results could be saved, bookmarked or printed, with a small excerpt of text being copied to another document.

The assessment could be quite open, in which case you might have to validate that all the learning objectives have been satisfied, or the questions can be quite prescriptive to cover each skill. For example, the task could require a particular website to be bookmarked, in which case the learner's completed answer sheet would provide all the evidence required (as long as all the objectives were covered).

For Merit learners, a further task requiring them to collect some extra information on the topic and also find a picture would be necessary. Learners would be expected to copy and paste the best results of their search and the image into another document, and this would provide the evidence for LO5 and LO6.

## Exploring Email (4284)

### Introduction

In this module, learners become more familiar with email. They learn how to extend the use of email by sending and receiving attachments. They also learn more about the email software by learning how to use the address book and to manage folders to store emails. At this level, learners should be able to recognise the difference between web-based and ISP-hosted email, and feel confident to send and receive emails using either.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Compose, edit, read and respond to emails	P	See below	Learners can access their own email account and use the email software to compose, send, read and reply to messages. They know their own email address. They complete the subject line of the email when composing a new message. They can use the text tools in the email software, such as copy, paste, delete and spellchecker (if appropriate), to edit or refine their messages.
2 Add addresses to the address book	P	Printout or screenshot of address book showing new addresses and groups	Learners can add new email addresses and groups to their address book and add addresses to the groups.
3 Use the address book to send copies, blind carbon copies and forward emails	P	See below	Learners understand the difference between cc, bcc and forward and how to use these. They use the address book to send copies and forward emails to addresses in their address book. (They can use the new addresses/groups they have added in LO2.)
4 View an attachment	P	Printout of attachment as evidence of having been able to view it successfully, or content of email reply will verify that attachment has been viewed	Learners demonstrate that they can view an attachment which they receive with an email. This could be a text document, an image or other popular file format. You could ask the learner to reply to the email, answering something about the contents of the attachment as evidence of having viewed it.
5 Add an attachment to an email	M	Evidence of attachment could be in a printout of an email showing attached file or icon in the header	Learners attach an image or document file to an email. Learners do not need to have created the file, but should know where it is located and be able to navigate to it without help. The file should be an appropriate size for sending on slow connections.
6 Manage email folders	M	Screenshots showing new folder and contents	Learners create and name a new folder, and move the email they have sent for LO5 into this folder. At this level, moving mail between folders will be manual – learners are not expected to set up mail rules.

## Getting started

Any email software can be used to complete this module, for example Microsoft Outlook or web-based email. However, the software needs to have a simple address book facility.

Ideally, each learner should have their own email address/account to complete this module. However, learners are not expected to be able to set up their own email addresses/accounts.

In order for the learners to appreciate the advantages of email communication, it would be useful if some messages could be sent over distance (for example, to a school in another district or country and care should be taken to explain to learners how communications with the partner school are safe). For initial classroom practice, it would be ideal if learners could be given addresses of others in the same group, so that replies can be received quickly. If it is age-appropriate to do so, learners should consider how to safely and considerately contact unknown people and organisations. You should introduce learners to the concept of attachments, and encourage them to send attachments with their emails. Learners should be able to open attachments in emails sent to them and understand the importance of only opening attachments from known senders.

For schools on a network, it may not be obvious to learners that an internet connection is necessary to send and receive email. You might need to mention this, so that learners do not assume that every machine will send and receive email without an internet connection. Conversely, if learners are using mobile phone email systems, they may need your assistance to connect and disconnect in order to send and receive emails (learners' ability to do this is not assessed in this module). However, learners are expected to be able to complete any login procedure by themselves.

Setting the 'include message in reply' option in the email software may reduce the burden of printing sequences of emails for assessment and moderation.

At this level, all learners should understand the two main possibilities for email (ISP-hosted and web-based) and, if possible, you should give learners experience of, or information about, both.

### eSafety notes

We recommend that schools have an acceptable-use policy regarding email and internet use. This should be explained to learners at an appropriate level of detail, before using email. An emphasis should be placed on the importance of using suitable language, only replying to messages from known senders and only opening identifiable attachments or hyperlinks. Similarly, if web-based email is being used, carry out appropriate measures/screening to ensure that learners do not access unsuitable emails. Further information can be found in section 5.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>web mail</li> <li>ISP hosted mail</li> <li>mailbox</li> <li>attachment</li> </ul>	<ul style="list-style-type: none"> <li>folder</li> <li>online/offline</li> <li>address book</li> <li>blind carbon copy (bcc)</li> </ul>

## Assessment guidelines

Both Pass and Merit learners need to be able to use email software to write, send, receive, read, reply to, cc, bcc and forward email messages. This includes understanding the key parts of the email message such as To, Subject, Message and From. They should also be able to use the text tools in the email software to edit and refine their emails. They are expected to understand where/how the email software stores messages in folders such as the inbox, sent folder and deleted items/trash, so that they can find previously stored messages. All learners should also be able to add an address to their address book, and open an attachment they receive with an email. In addition to this, Merit learners should be able to add an attachment. They should also start to understand how to manage their mailbox, by being able to create new folders and move mail into them.

On a more general note, Merit learners would be expected to work independently to complete their emails correctly (including the subject line) and use the text tools to refine their messages. A Pass learner should know how to use these tools, but may be unable to spot errors or make refinements.

At this level, it is not expected that any learners should be able to create their own email accounts, but they are expected to be able to login with passwords, if necessary.

Although it is not assessed directly, there is an underlying expectation that all learners know that a computer must be connected in order to send and receive email, and that emails can be sent over any distance in the same time frame. All learners are also expected to understand that an email address identifies where the mail goes but, unlike written postal addresses where a small error in an address might not stop a letter being delivered, a small error in an email address will result in the mail not being sent/received.

To assess this module, you could give learners a task to write and send a simple email to a given address, asking a survey question such as how long it takes the recipient to get to school. They read the reply and add the address of the sender to their address book. They can then forward and cc this email to other members of the group and send a bcc to you. A message from you could then include a graph of another similar survey, and they could use all this information to produce a summary email, with an attachment of further information which they could send to you.

You could ask Merit learners to de-attach the graph when they reply, and attach some different information (for example, a further graph or summary document) to an email. They could then create a new folder in sent items called 'work', and move the message into it.

If the 'include message in reply' option has been set in the email software, evidence of the final message in each case should be sufficient, because this would include/show all the previous messages. This evidence could be in the form of a screen capture, printout or a saved email file produced by you. For Merit learners to show that they have achieved LO5 and LO6, a screen capture of the new folder and its contents (showing an attachment) would be sufficient.

## Exploring Multimedia (4285)

### Introduction

This module aims to introduce learners to multimedia authoring software. The aim is to produce a short presentation for a specific audience, recognising the need for good page design and clarity.

The presentation should cover a particular theme, and should contain both text and images. It should be intended for access by individuals who will navigate through the slides at their own speed and be offered choices throughout, via hot spots or buttons.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a page of text, images and sounds which are activated by appropriately named and positioned buttons	P	See below	Ensure that any buttons or text which are used for navigation, or to open files or activate sounds, are clearly marked on the printout. If it is not possible to tell from the printout what an object is doing, then the learner will need to write this on the printout, next to the objects.
2 Use effective page design	P	See below	Avoid overcrowding of text; employ suitable fonts, text size and position for purpose; choose readable combinations of text and background colours.
3 Organise screens and identify appropriate choices and links	P	Final printout of slides	The learner is able to link at least three slides in an organised way.
4 Create pages which offer the user options	M	See above	There should be a choice of routes through the presentation, not simply a linear one.
5 Demonstrate how the presentation meets the needs of the intended audience	M	Teacher evidence or printout	Learners must be able to identify at least two elements of the presentation (content, language, layout, colour, style, etc.) which address a particular need.



## Getting started

The most common software package for this module would be Microsoft PowerPoint, although Keynote in iWorks or educational software versions are also suitable.

You may also want to encourage learners to use some of the following if they are available, but they are not essential:

- microphone
- scanner
- digital camera or digital microscope
- internet.

You will need to gather a collection of images from the internet, clipart, scanner, etc. The emphasis of this module is on using text, images and sounds in a presentation, rather than on gathering those resources. Appropriate eSafety and ethical guidance should be given if learners are asked to obtain their own images. Further information can be found in section 5.

It would be useful to look at some sample presentations and discuss how a user might navigate through them. Learners should consider different page layouts and designs. Draw attention to how changing the font and text size can change the effect of text. What colour combinations of text and background work well?

Introduce the use of storyboarding, and get learners to plan out in rough form what they are going to do before they open the multimedia application. It may be helpful to use a separate card / sheet of paper for each page or screen, so that they can physically change the order, or change the content of a page.

Encourage learners to check that their hyperlinks and buttons work as intended. It is easier to get this stage right if learners leave it until the later stages of constructing the presentation (learners should decide the final version of links and routes through the presentation before they insert hyperlinks).

Learners will find the idea of adapting their presentation to a particular audience easier if:

- they have spent time discussing in class how/what features in sample presentations made them particularly suitable for their purpose and their audience
- the target audience is familiar to them, for example parents or other children.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>• interactive</li> <li>• non-linear</li> <li>• hot spot/hyperlink</li> </ul>	<ul style="list-style-type: none"> <li>• hypertext</li> <li>• navigation</li> <li>• storyboarding</li> </ul>
<ul style="list-style-type: none"> <li>• apply the principles of writing for an audience</li> <li>• use general word-processing and page-design skills</li> <li>• manipulate images.</li> </ul>		

## Assessment guidelines

You could ask learners to create a presentation for a particular audience (for example, parents at an open evening, or a younger child) on a theme (for example, ancient Egypt). The number of slides they can use would be limited and they should use a similar colour scheme throughout. The learners will use a resource bank of pictures, sound and text files, which they can select from and use in their presentation. Learners should not have to search elsewhere during the assessment activity.

At Pass level, learners should be able to produce three linked slides with text, images and sound. At this level, they should also be able to arrange the items well on the page, and be able to link the pages in an organised, if simple, way.

At Merit level, learners should include links which allow the user to choose their route through the presentation, rather than simply going on to the next slide. Learners at Merit level should be able to give a written or spoken description, identifying at least two things they have modified to meet the needs of the audience better.

**Next Steps Learning Objectives Record Sheet**

Learner Name .....

Learners must achieve all Pass learning objectives to gain a Pass.

Learners must achieve all Pass and Merit learning objectives to gain a Merit.

*For an explanation of each learning objective, please see the amplification section of the relevant module.***Stage 1**

Learner was able to:	Pass/Merit	Please tick
<b>Exploring Documents (4278)</b>		
Create and edit a text document	P	
Edit text for a specific audience	P	
Add images or other objects to a document	P	
Refine and organise the layout of a document for a specific audience	M	
Evaluate a finished document	M	
<b>Date of assessment</b>		
<b>Exploring Images (4279)</b>		
Create repeating patterns, using stamps and/or copy tools	P	
Create pictures, using a variety of tools and effects	P	
Select appropriate objects, copy and resize them	M	
Save drafts showing the development of the design	M	
<b>Date of assessment</b>		
<b>Exploring Spreadsheets (4280)</b>		
Enter labels and numbers into a spreadsheet	P	
Enter and copy simple formulas	P	
Create a graph	P	
Modify data	M	
Use a spreadsheet to answer a modelled scenario ('what if')	M	
<b>Date of assessment</b>		

<b>Exploring Databases (4281)</b>	
Add new records to a data file	P
Identify field types	P
Use 'equals', 'more than' and 'less than' in searches	P
Rephrase a given question in terms of search criteria	M
Interpret data	M
<b>Date of assessment</b>	

## Stage 2

<b>Exploring Programming (4282)</b>	
Plan an algorithm involving repetition to draw a simple shape or pattern	P
Create a program using repetition to produce a simple shape or pattern	P
Predict the output of a program that includes repetition	P
Plan an algorithm to draw a complex shape or pattern, using decomposition	M
Create a procedure and use it in a program to draw a complex shape or pattern	M
<b>Date of assessment</b>	

<b>Exploring the internet (4283)</b>	
Use internet tools to find information	P
Evaluate relevance and usefulness of material	P
Store and retrieve information	P
Copy and paste information from a website	P
Save URLs and objects from a website	M
Use extended search skills	M
<b>Date of assessment</b>	

<b>Exploring Email (4284)</b>	
Compose, edit, read and respond to emails	P
Add addresses to the address book	P
Use the address book to send copies, blind carbon copies and forward emails	P
View an attachment	P
Add an attachment to an email	M
Manage email folders	M
<b>Date of assessment</b>	

**Exploring Multimedia (4285)**

Create a page of text, images and sounds which are activated by appropriately named and positioned buttons	P
Use effective page design	P
Organise screens and identify appropriate choices and links	P
Create pages which offer the user options	M
Demonstrate how the presentation meets the needs of the intended audience	M

**Date of assessment**

Please sign and date this form when the learner has demonstrated, through an assessment test, that he/she can achieve the learning objectives of each module at Pass or Merit level without any additional assistance.

Teacher.....

Date .....

## On Track modules

## Documents for a Purpose (4289)

### Introduction

In this module, learners expand their word-processing skills and build on skills developed in 'Exploring Documents', so that they can create documents for many purposes. They are able to use the software to change the look of the text, add tables and amend the page layout, including the way images are displayed in the document. They also learn how to make changes to the document as a whole, including adjusting margins, adding page numbering, or adjusting whether the page appears in landscape or portrait layout. They understand how to use the word-processing software to edit a document to make it more suitable for its purpose.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create and format text which is suitable for a particular purpose	P	See below	Learners can apply a range of formatting options, such as bold, italic and underline, as well as being able to amend font type and colour, to highlight key points or titles within the text and make the document suitable for its purpose. Learners should also demonstrate an ability to change the look of text/passages within a document, to make it more appropriate for its meaning.
2 Adjust properties to allow graphics, or other objects, to fit well within the document	P	See below	Learners can use text wrap, image/object size, cropping or positioning options, so that images or other objects are placed appropriately in the document. Learners should make appropriate judgements when resizing images, bearing in mind that an image will deteriorate when aspect ratio changes. Learners should demonstrate an ability to be in control of how objects look and are how they are placed within the text.
3 Insert a table into a document	P	Learners produce a printout of their document which shows how they have used tables, graphics and formatting on the text to make it appropriate for its purpose	Learners insert a table within the document.
4 Use advanced formatting features	M	See above	Learners use bullet points, numbering, lists or tabs to add extra definition to their document.
5 Use page-formatting options	M	Learners produce a printout of their document which shows how they have used tables and graphics, and have formatted the page and the text to make it appropriate for its purpose	Learners are able to change page layout (portrait to landscape or adjust margins) and add page numbers or other items to the header or footer of the document.
6 Adjust page formatting for a specific audience	M	Teacher evidence or printout	Learners are able to justify (at least verbally, if not in writing) the choices they have made when formatting their document to make it appealing to its target audience.

## Getting started

Any word- or text-processing software can be used for this module, for example Microsoft Word or Pages in iWorks. You will need appropriate images for the learners to insert into their documents. These may be from a CD-ROM, a clipart file, or the internet, or created for the purpose by use of a scanner or digital camera, mobile phone or digital microscope. Appropriate eSafety and ethical guidance should be given if learners are asked to obtain their own images. Include discussion on intellectual property and copyright. Further information can be found in section 5. A colour printer would be useful to print final documents, but it is not essential.

Making learners aware of the white space left on a page is a good way to get learners thinking about page design, and to encourage them to experiment with the layout of items on the page. Experimenting with the effect of different wrapping options on images is a good way to learn how to manage the white space more effectively. Using whole-page print view will enable learners to have a clearer idea of the layout of their pages.

Learners will be more likely to appreciate how to make a document appealing to a particular audience if they understand the needs of the audience they are given. For example, they will be able to understand easily how font size and colour could be altered to suit young children, whereas they might find it difficult to know how to make a document look 'professional'. Although the learner does not need to write the text, it can be useful to discuss how text is worded and detail is varied for different audiences. They should appreciate that text content, together with the formatting options which they can apply, make a document appeal to its intended audience. Looking at different styles of books is a good way to compare and contrast the different techniques, and it also encourages learners to think about different audience types.

Learners should practise creating a variety of documents which benefit from different page layouts and different text arrangements, like bulleted lists or tables (for example, instruction sheets, menus or programmes for events). This will help them to understand the benefit of the new features they are learning about. Also, writing and printing longer documents will help the learners to realise the benefits of features like page numbering, or adding their name to the header or footer of a document.

Practising producing documents with a different look and feel, then discussing what sort of things make the document appropriate for different purposes, will help the learners to understand how to create different looks, as well as being able to physically make the changes. Developing these discussions will also help learners to understand how to evaluate their work.

When working with images and tables in a document, it is useful to get the learners to ensure that text flow (wrapping) around an object is a property of the object, not the text, and that different objects can be treated in different ways, depending on what they want to achieve. When resizing images, it is useful to demonstrate that resizing by stretching distorts the image.

When working with longer documents, it may be useful to produce an unformatted text file for the learners to start from, containing the majority of text for amendment as necessary.

### Prior knowledge

Learners can

- demonstrate the skills described in 'Exploring Documents'.

### New words

- line spacing
- margins – left, right, top and bottom
- text wrap
- justify text
- align left/right/centre
- lists
- resize/scale/crop
- table
- page setup, header/footer, bullets
- tab
- aspect ratio



## Assessment guidelines

Both Pass and Merit learners will need to be able to produce a document which contains both image and table objects. They need to be able to demonstrate that they are in control of the placement within the document of these objects and the text. They should also be aware of the text wrapping options for objects, so that they are able to make choices about how objects and text appear within the document. All learners should be able to produce a document which is suitable for its purpose, and should be able to edit the document, proofread or use a spellchecker to produce a document which is mostly error free.

In addition, Merit learners should be able to add further formatting to the text, such as bullet points or numbered lists. They should also be able to demonstrate an ability to apply changes to the whole document, such as altering page orientation, margin size, or adding a header/footer and page numbering. Overall, a Merit learner should be able to use the word-processing software confidently, to produce documents which show an awareness of how information is placed within a document and how this can make a document better suited for its purpose. Merit learners should be able to use the software to experiment freely with the look of a document, to make it better suited to its purpose.

To assess this module, the learners could create an information page, for example, about a country or favourite animal. The main content of the text could be saved and given to them as an unformatted text file to copy and paste into their document. Alternatively, it could be a piece of text which they have produced in a different subject area, and which they now need to improve. The text will require some changes and additions to be made to it, so that the learners show they can proofread, spellcheck, add and edit text well. You could then ask learners to add an image (you would provide this) and insert a table. (The table could, for example, be details of population and climate for the country, or height, length, weight and speed characteristics of the animal.) Pass learners would then need to amend the look of the text, and the arrangement of the objects and text within the document, to make it suitable for its purpose (for example, a reference sheet for other learners). You should word the assessment or set it up in such a way that text wrapping options are required for either the table or the image.

You could then give Merit learners some additional information (for example, about a second country or animal) to include in their document. You could also ask them to create a summary sentence at the beginning of the document, with either a numbered or bulleted list stating which countries or animals are included. You should also ask them to change the page orientation (to landscape) and arrange the information so that it suits this layout better. You could also ask them to include page numbers and/or their name in either the header or footer of the document. Merit learners should be able to write about their work, and to explain how the choices they made when creating their document make it suitable for its purpose.

## Multimedia for a Purpose (4290)

### Introduction

This module builds on work in Next Steps module 'Exploring Multimedia', using multimedia authoring software. The aim is to create an automated presentation for a target audience, incorporating transition and simple animation.

While working on this module, you should encourage learners to find or create appropriate resources, and to consider appropriate use of transitions and timings. They should consider how well the presentation fits its purpose and the needs of the target audience.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a plan for a presentation	P	See below	The order in which the slides will be viewed should be clear from the printout.
2 Recognise and select appropriate source materials	P	See below	Learners select materials which are relevant, and which demonstrate some awareness of the needs of the target audience.
3 Incorporate transition and animation	P	See below	Learners should include information on effects they used as annotations of the relevant slide.
4 Incorporate timings, audio and 'build' effects	M	Final printout of slides, plus written comments on effects used	This is best presented as a 'script' for each slide, clearly identifying when each effect begins, what it is and how long it lasts.
5 Demonstrate a clear sense of audience and purpose	M	Final printout, plus written description	The overall effect of the presentation matches its stated purpose and intended audience. Learners provide a short written description, explaining how their choice of material, effects and structure are appropriate to the audience and purpose of the presentation.

### Getting started

The most common software package for this module would be Microsoft PowerPoint, although Keynote in iWorks or educational software versions are also suitable.

You may also want to encourage learners to use some of the following, if they are available, but they are not essential:

- microphone
- scanner
- digital camera / mobile phone
- digital video camera or web camera (plus supporting software to enable editing and viewing)
- digital microscope.

Teachers should discuss the importance of obtaining a person's consent prior to taking their photograph or including them in a recording of video or sound. They should also discuss when it is, or is not, appropriate to share this with others.

You will need to provide a suitable bank of resources from which learners can select materials, such as clipart, CD-ROMs, eBooks, curriculum materials, internet sites, etc. Appropriate eSafety and ethical guidance should be given if learners are asked to obtain their own images by either using digital cameras or by sourcing images from the internet. Further information can be found in section 5.

You will also find it useful to provide sample presentations for learners to discuss (for example: Who is the presentation intended for? Does it 'work' well? What features are good/bad/distracting?).

You could start the module by asking learners to create a storyboard to describe how to carry out an everyday activity, such as making a favourite food. When they have created the basic slides, show them how to use animations and transitions. Give time for learners to experiment with these effects, both in this presentation and in other multimedia presentations they have constructed previously (or which you have provided for them).

At this stage, you may need to offer some guidance to avoid over-enthusiastic use of effects. Demonstrate how to control timings and introduce other effects. Learners will need time to experiment, not only with timings within individual slides, but also on the overall timing given to each slide. For example, they will need to think about how long it might take an adult or a child to read a piece of information or an instruction, before an animation or sound is activated.

There are many approaches to combining text and graphics in a multimedia presentation. Learners could experiment with using resources such as Photostory 3 (freely downloadable software) to link together still images and control the panning, transitions, text, narration and music. Learners could then explore a presentation software (such as PowerPoint or Keynote) and consider how this differs, and where each resource could be used most effectively.

Prior knowledge	New words	
Learners can <ul style="list-style-type: none"> <li>• demonstrate the skills described in 'Exploring Multimedia'.</li> </ul>	<ul style="list-style-type: none"> <li>• transition</li> <li>• slide view</li> <li>• outline view</li> <li>• ethical behaviour</li> </ul>	<ul style="list-style-type: none"> <li>• automated</li> <li>• presentation</li> <li>• animation</li> </ul>

## Assessment guidelines

Learners create an automated presentation, to teach a particular topic or to explain how to do something.

At Pass level, learners should be able to produce an automated presentation incorporating images, transitions and animation (such as 'fly in from left'). The material selected should be appropriate, even if the timings are not.

At Merit level, learners should include appropriate timing and effects. (This will be evident from their written description for each slide.) They should be able to give a written description, referring to their choices of layout, timing, effects, images, etc., to explain how these fit the purpose and the target audience. (The description does not need to cover all aspects of the presentation – three or four points should demonstrate this clearly.)

## Spreadsheets for a Purpose (4291)

### Introduction

In this module, learners use spreadsheet software to create a working spreadsheet with a clear purpose. Learners work methodically through a design and development process, being able to test, correct and modify the spreadsheet as they progress. They are able to create a final spreadsheet which suits its purpose and is presented in an appropriate way for its audience. They begin to understand how to evaluate their work, and can assess how well their spreadsheet meets its objectives.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Design a spreadsheet with a specific purpose	P	Teacher evidence or printout	Learners are able to design a spreadsheet to model a real-life scenario, e.g. researching which bicycle to purchase. They are able to talk or write about what the objective of the spreadsheet is, and how their spreadsheet will help them to meet that objective. They understand enough about the data and formulas they need to include in the spreadsheet to make a start on it.
2 Create the spreadsheet	P	See below	Learners enter data, text and formulas to create their spreadsheet. They are able to make modifications to their design to make it work.
3 Test the spreadsheet	P	Printout of spreadsheet, with formulas showing	Learners are able to test their spreadsheet to check for errors and to see that formulas are correct. They make any corrections required to create an accurate spreadsheet with very few errors.
4 Modify the spreadsheet to make it suitable for its purpose	M	See below	Depending on the purpose of the spreadsheet, learners should be able to make the spreadsheet user friendly, e.g., good use of titles and formatting, OR presenting the results of the spreadsheet in a way that is easy to understand by using appropriate graphs or charts.
5 Evaluate the spreadsheet	M	Printout of spreadsheet (not displaying formulas) with modifications made (LO4) and learner's comments (LO5)	Learners can evaluate how well their spreadsheet manages to suit its purpose. They are able to make suggestions for improvements, or give reasons for modifications they have already made.

## Getting started

Any spreadsheet software can be used to deliver this module, including Microsoft Excel or Numbers in iWorks.

Learners should already know how to create a working spreadsheet; this module is concerned with their ability to create a spreadsheet for a purpose. It can be a big leap for learners to go from following instructions to designing and creating something by themselves, and they will need to build up several skills to be able to do this. Learners can find it difficult to be creative while also being realistic about the limitations of their skills with the software. Practice and your guidance are essential, so that learners learn how to have ideas for spreadsheets which are achievable. You can help by providing tasks which are not too open-ended, and which provide the learner with easy options for spreadsheets. The process the learners go through is complex, so the scenario (design brief) does not need to be. A simple working spreadsheet which suits its objective well, and allows the learner to fulfil all the LOs, is better than a complex idea which the learner finds difficult to create without support.

Although it is not essential for the assessment of this module, learners may need to have knowledge of a wider range of functions to use within their spreadsheets. It would, therefore, be beneficial while practising to incorporate new functions into a relevant context, so that learners can extend the possibilities for their spreadsheet design.

Learners need to learn how to design, test and evaluate their spreadsheets, and may benefit from working with some formal design, evaluation and testing methods, which could be provided by you or created by the group during lessons.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>design brief</li> <li>model</li> <li>test</li> </ul>	<ul style="list-style-type: none"> <li>system design</li> <li>evaluate</li> <li>scenario</li> </ul>
<ul style="list-style-type: none"> <li>demonstrate the skills described in 'Starting Graphs' and 'Exploring Spreadsheets'.</li> </ul>		

## Assessment guidelines

Both Pass and Merit learners should be able to design and create a working spreadsheet to suit a particular scenario or design brief. They should be able to test their spreadsheet to make sure that it works. In addition, Merit learners should be able to modify their design further, to make it more user-friendly or to present the findings of the spreadsheet in an appropriate way. Merit learners should also be able to evaluate their work in relation to how well it achieves its objectives.

For assessment of this module, you should present learners with a design brief or scenario which will allow them to design spreadsheets within their ability and understanding (for example, a spreadsheet to work out which bicycle to buy).

Evidence should be in the form of 'before' and 'after' spreadsheets, showing evidence of modifications. It could also include test and/or evaluation sheets from the learner, or their printouts could be annotated as evidence for evaluation.

## Databases for a Purpose (4292)

### Introduction

In this module, learners use the knowledge and skills developed during Next Steps module 'Exploring Databases', and apply it to designing and implementing their own database. In doing this, they will need to consider how databases are used in the real world, and consider the features of a good database.

The aim is to allow learners to demonstrate that they can consider what features are needed to make a useful database. This includes consideration of how the database will be used, who can enter information, and who can access it. Although it is not specifically assessed in this module, learners should be aware that real databases may use many other means of data entry, for example, barcode scanners. They should be able to give examples and talk about the advantages of different methods. General discussion should cover the concept of personal data and data protection (see section 5).

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Identify a purpose for a database	P	Written description	The learner identifies the overall purpose of the database, and how it will be used.
2 Design, create and develop a database for a specific purpose	P	See below	The learner creates a simple database, identifying an appropriate (not necessarily exhaustive) list of fieldnames. The learner produces a simple data-entry form to collect their data, so that a small number of records can be added to their database.
3 Utilise different field types	P	Printout which shows evidence of handling different types of data, e.g. data-entry form with yes/no field, or database screen captures showing drop-down lists	The learner should be aware that different types of data may benefit from being handled differently. They can show this either in data-entry forms or in how they set up the field types in their database. E.g. learners choose an appropriate format (text, number, yes/no or drop-down list) for each field.
4 Test database	M	Teacher evidence or printout	The learner needs to demonstrate to you that the database works as expected. The learner should be able to describe to the teacher two or three tests to be run, and the teacher should verify whether the tests provided the correct information in each case.
5 Demonstrate an awareness of data security	M	Written description of security measures	The learner shows a basic understanding of how different users might need to see different information from within their database. They should also understand fundamentals of data security, e.g. that only authorised people should be able to change data, and that passwords might be needed to allow different levels of access (e.g. for viewing or editing).
6 Transfer data between applications	M	Printouts showing original document and revised document that includes imported information	The learner uses data imported from/exported to other associated software packages, e.g. spreadsheet/word-processing packages.

## Getting started

You will need to provide:

- database software, such as Microsoft Access, or an open source platform such as phpMyAdmin; there are also database packages designed for use in schools, which would be suitable
- samples of questionnaires and real-life data collection forms
- reference materials for learners to use in building their own databases.

It will be helpful to introduce the module by getting learners to think about the different databases they have already encountered, or those they might encounter as adult citizens and consumers. For example, membership of a club, health records, customer surveys, etc. – all these involve the collection of data on individuals, and its entry into a database. If they have mobile phones, learners are likely to have on it a database of their contacts with related information. Perhaps they have wanted to buy a particular item and have searched through catalogues, either in book form or online. Perhaps their family has been trying to select a holiday, or book a train journey, or buy tickets for a concert – these activities also involve the use of databases. Similarly, they could be using an online database (such as Spotify) to store their music and audio files. Which databases have been easier to use, and what has made some databases harder to use?

This module provides a good opportunity to discuss the idea of the learners' digital footprint and about how they can protect their personal information. For example, learners could discuss the extent to which they are willing to share their personal information and other data, such as their search history, their likes and dislikes and details about their online purchases.

Show learners how to create a form for collecting their data. The form does not have to be created within the database software, but can be created, for example, in a word processor, or even by hand. Learners should be thinking about how to collect data efficiently and accurately, rather than about using complex form-creation options or software.

When designing their database, it is important for learners to try to identify all the questions they will want to answer, and so identify the full range of fields before they open the database application. (For example, in most databases, last name and first name are two separate fields; addresses are easier to sort for mailing lists – for example, on a membership/customer database – if each line of the address has a separate field, and so on.) Learners should also consider how selection of a certain field type can support data accuracy in the database (for example, drop-down fields for where the possible options for a field content are known, e.g. in hair or eye colour, etc.).

Some professional database software (like Microsoft Access) will have many more features, and a more complicated user interface than the learners are required to use for this module, so you should take care to limit the functionality so that the learning objectives can be achieved without learners becoming confused by tools and options which are not necessary. For example, it is not a requirement of this module that learners can produce a database with multiple tables, or create queries or reports from within the database software.

Prior knowledge	New words	
Learners can <ul style="list-style-type: none"> <li>• demonstrate the skills described in 'Exploring Databases'</li> <li>• enter data</li> <li>• describe and use a simple database structure</li> <li>• choose search criteria.</li> </ul>	<ul style="list-style-type: none"> <li>• flat file database</li> <li>• distributed database</li> <li>• field type/format</li> <li>• browse mode / layout mode</li> <li>• form</li> </ul>	<ul style="list-style-type: none"> <li>• query</li> <li>• report</li> <li>• verification</li> <li>• validation</li> <li>• import/export data</li> </ul>

### Assessment guidelines

Both Pass and Merit learners are required to show that they can identify the users of a database, the purpose of the database, and some of the key questions the database will be used to answer. They must also be able to design and implement a suitable, simple database by selecting appropriate fields and deciding how field values will be entered.

In addition to this, Merit learners are required to demonstrate that they can check the performance of their database, and also show some appreciation of security issues. Merit learners are also required to show that they can export information from their database into another application. For example, a possible assessment activity might be to design and construct a membership database for a new sports club, with a range of different fields. For Merit learners, data transfer out of the database into another application might include simply creating a new members list in word-processing software for the club notice board, or creating a useful chart in spreadsheet software.



## Programming for a Purpose (4293)

### Introduction

This module builds on the Next Steps module 'Exploring Programming' by introducing interactivity into learners' programs. These can include games, or learners can use a control box or other control device linked to a computer, to write sequences of instructions which will control more than one output device, and will build sequences of events to solve a problem.

Learners can continue to create their code using a block-based language (Scratch). However, for learners who wish to progress to Cambridge IGCSE® Computer Science, teachers may like to introduce a high-level programming language such as Python.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Plan an interactive program using abstraction	P	Learner's flowchart showing how input and output are related	It is expected that the abstraction of the system will include the inputs and outputs of the system, and the relationship between them.
2 Create and test an interactive program using selection, input and output	P	A screenshot or images of the learner's completed code; a completed test table	The outputs are determined by the appropriate input(s). At Pass level, the program should work when tested with normal values.
3 Predict the output of an interactive program that uses input and selection	P	Task sheet showing a provided program and the learner's prediction	For assessment, programs will be provided as a flowchart. Learners should make their prediction by working through the logic of the program.
4 Create and formally test an interactive program using selection, input and output	M	A screenshot or images of the learner's completed code; a completed test table.	At Merit level, the program should work when tested with normal values, extreme values and erroneous values. The same program can be used as evidence for LO2 and LO4.
5 Correct (debug) a short interactive program containing more than one error	M	Task sheet showing the provided program and the learner's correction of the errors present	For assessment, programs will be provided as a flowchart. Provide learners with short programs with more than one error to correct.

## Getting started

Learners can develop on-screen games or interactive simulations using widely available programming languages, such as Scratch or Python. Scratch is developed by the Lifelong Kindergarten Group at the MIT Media Lab. See <http://scratch.mit.edu>. More information about Python can be found at [www.python.org](http://www.python.org)

The interactive input can include text, mouse, touch prompts or keyboard input. Output could be text, graphics or sound.

Before embarking on their own project, learners should attempt to reverse engineer similar programs, working backwards from a running program to identify the rules which their own program must obey. Learners could identify evaluation criteria for programs, for example what sort of rules make a game particularly engaging?

Learners should begin by designing their program. It should have a clear purpose; this can be an authentic, real-world problem, but is more likely to contain a fun element, for example programming a mathematics game for younger learners. Learners should describe in detail the algorithms that underpin their program, typically as a set of rules defining the relationship between input and output. Learners should be familiar with programming procedures, such as the generation of random numbers or dates and times, within the chosen programming language.

Encourage learners to adopt an iterative development process for their program, beginning by implementing a minimum viable product which includes just essential features. Learners should test this thoroughly, both by tracing through their program by hand and by running the program with test data to confirm the output is as predicted. When learners have a bug-free program they can add further features, similarly testing each of these in turn. Avoid debugging the learners' code for them. It is better to teach debugging strategies which they can apply for themselves, for example describing to a friend exactly what their program should do and what it is doing, or by tracing through their program by hand.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>input</li> <li>output</li> <li>selection</li> <li>test</li> <li>debug</li> </ul>	<ul style="list-style-type: none"> <li>interactive</li> <li>feedback</li> <li>data capture</li> <li>analogue/digital</li> <li>interface</li> </ul>

## Assessment guidelines

For Pass level, learners should be able to produce a basic working solution and demonstrate debugging. For Merit level, learners need to demonstrate iterative development, rather than perfection and be able to debug more complex programs.

It is recommended to provide learners with a design brief which makes a range of solutions possible, or learners may choose the subject for their project themselves. In this latter case, ensure that learners have chosen a project that they can realistically accomplish using the time and resources available.

The assessment criteria are about the fitness of the program for its purpose, not the learner's art or craft skills.

Examples of possible assessment activities might include designing a drill and practice mathematics quiz, a maze game, an interactive simulation of driving, the spread of an epidemic or an astronaut detector for the International Space Station. All of these allow the possibility of increasingly sophisticated solutions.

## Website Design for a Purpose (4294)

### Introduction

In this module, learners are introduced to web page design. They learn how to create a simple series of connected webpages, incorporating links to other pages and to other websites, creating some basic navigation through their pages. They are able to select and arrange images and text on the pages, so that they are appropriate to a particular audience, and give the content some simple organisation. They understand the basics of HTML coding. The aim is that the learners begin to understand some of the differences between webpages and other documents, and start to think how to present content in a suitable way.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a series of connected web pages	P	See below	Learners should be able to organise text into a series of two or three webpages. Learners know how to save their pages so that they can be viewed as HTML.
2 Include links	P	See below	Learners provide working links to and from all of their webpages. Learners also include links to other websites. The links should be easily identifiable and placed sensibly within the pages, but there is no expectation for a navigation menu at this level.
3 Insert images	P	A screen capture of the webpages or a single saved webpage (representative of all the criteria)	Learners are able to insert images into their webpages. They should be of an appropriate size and quality, and learners should be able to demonstrate that they are in control of where the images are placed.
4 Demonstrate user awareness	M	Screen capture or saved webpage showing changes/refinement made for this learning objective	Learners test their site (the two or three pages from LO1–3) and make refinements to the navigation options to make them more user friendly or more appealing to the target audience. They demonstrate some idea of consistent navigation (e.g. a very simple navigation menu), and of consistency in content presentation between the pages. They change font or page formatting to make it more suited to their audience, considering that not all fonts are available through all browsers so this may affect the way the viewer sees the webpage.
5 Recognise HTML code	M	If the learner has created webpages with HTML code, no further evidence is required. Otherwise, a printout of the source code of one of the web pages identifying/describing at least two of the tags is required	Learners are able to identify some basic HTML tags in the source code for a webpage OR they are able to create a very simple webpage using HTML code.

## Getting started

Any simple web design software can be used for this module. (Microsoft Word can also be used by selecting the 'Save as web page' option, but this approach tends to create very large web files which may not be easy to manage. In addition, Microsoft Word may require some extra explanation about the source code it generates, because it is very complex. You should also show learners what works and what does not in webpages because, unlike web-design software, Microsoft Word will allow you to create things and then change them afterwards when you save as HTML.)

It is also possible to deliver this module just using Notepad (by saving as xxx.html), because only a small number of simple HTML tags are required to achieve all the learning objectives. Webpages can be created using the developer tools in the latest versions of browsers.

The webpages created do not have to be published on the internet, as this is not assessed in this module, but learners should consider the purpose of their webpage and the viewers who would access it. If the web pages are to be published, however, consideration needs to be given to the eSafety and ethical implications of sharing content online. This should include ensuring the webpage and hosting service are secure.

You can give learners the content – they do not have to create it – but you should give it to them in such a way that they cannot simply 'save as HTML' from the documents they are given.

Image sizing and quality for the web can be a complex area which is not covered in the module. However, learners are expected to be able to select images of the right size and quality for their purpose. They should be aware that the higher the quality of the image, the longer it will take to upload, and they should begin to balance the size and quality of the elements of their webpages. They could either collect images from the internet, or select from a range provided by you. Learners do not need to create the images themselves. Appropriate eSafety and ethical guidance should be given if learners are asked to obtain their own images.

Designing for a purpose is easiest if both the audience and the objective are very clearly defined, and are something that the learners are likely to understand. For example, learners could not be expected to know what sort of features to include in a website for a professional business audience, but they could be expected to know how to make webpages appealing to learners of their own age, or for small children. The suitability of content should be discussed with learners, including the importance of not sharing personal information, of respecting copyright and of behaving responsibly (for example, not linking to inappropriate or illegal content).

Learners would also benefit from doing some simple website criticism – for example, by finding good sites and bad sites and looking at which things work well. Before doing this, eSafety guidance should be given outlining the expected behaviour if learners feel unsafe or if inappropriate content is evident on their device.

Encourage learners to create simple sites which work well and suit their purpose, rather than complicated sites which do not work properly and have too much going on to be efficient for their purpose. Even simple navigation can get complicated when there are several pages linked together, so you should encourage learners to test all links.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>hyperlinks</li> <li>anchors</li> <li>HTML</li> <li>source code</li> </ul>	<ul style="list-style-type: none"> <li>image quality</li> <li>image size</li> <li>ethical behaviour</li> </ul>
<ul style="list-style-type: none"> <li>demonstrate the skills described in 'Exploring the Internet'</li> <li>demonstrate some awareness of how to make documents suitable for an audience.</li> </ul>		

## Assessment guidelines

Both Pass and Merit learners need to be able to create a short series of linked webpages in which they have demonstrated an ability to organise text, images and links to suit its purpose, and to make it function as a simple website. In addition, Merit learners need to be able to show that they have a deeper understanding of the way webpages are constructed, by being able to recognise some basic HTML tags. Merit learners also need to be able to work independently to test and refine their work, to make it more suited to its purpose.

For assessment of this module, you could give learners some extracts of text from a newspaper about a topic of interest, like a theatre event. They could then use this information to create some pages of information about the event. Provide learners with images to select from, and perhaps also ask them to find weblinks to other similar events, or to the theatre company, to include in their webpages.

For Pass learners, a screenshot of the webpages or a single saved webpage would be sufficient evidence, if all criteria are demonstrated and the webpage is a fair representation of the other pages.

For Merit learners, evidence of refinements and changes to webpages, to make them more suited to their purpose, would be necessary. A screenshot or saved webpage showing changes from the previous (Pass) printout would be sufficient. If learners have written the pages using HTML code, no further evidence would be required. However, if learners have used web-design software, a printout of some source code annotated by the learner, identifying at least two of the tags, would be required.

## Networks for a Purpose (4295)

### Introduction

In this module, learners are introduced to networks. The aim of the module is for learners to become familiar with what makes up a network, and to understand a little about their purpose. They look at simple network design, and begin to understand how networks can be managed efficiently.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Design a simple network	P	See below	Learners can create a design for a simple network, e.g. a small home network. Learners should be able to produce a system which has all the relevant items connected in a meaningful way, and should demonstrate that they have made an attempt to show how the system could connect to the internet.
2 Identify the purpose and components of a network	P	Paper-based or printed network diagram	Learners add an index to their design which describes each component of their network and its function.
3 Demonstrate understanding of management issues associated with networks	M	See below	Learners can list two or three management tasks for their network, with explanations of why they are important.
4 Understand network security issues	M	Completed answer sheet for LO3 and LO4, or annotations on the system diagram	Learners can describe some security measures that would be appropriate to implement for their network.

### Getting started

Learners can use pen and paper to design their networks, or create their diagrams in another application. There are also specialist software programs which are suitable for design, such as Dia Diagram Editor, Calligra Flow or Microsoft Visio. Cisco also provide a free networking tool called Packet Tracer.

If the network diagrams are to be created electronically, then careful choice of software will make this task easier – creating complex drawings in word-processing software can be a difficult task.

Having symbols for the network components available on a disk, or stored on the school network, would be useful.

If appropriate, give the learners a guided tour of the school network or, if this is too complex, use a computer room or a simple network model. Learners will benefit from seeing simple network diagrams for real-life networks, and by seeing lots of examples.

Inform learners about a range of management and security issues relating to networks, such as updates to software, virus protection, user names, regular backups, passwords for remote access and training the users. This is a good opportunity for learners to consider the implications of unauthorised access to a network, such as the potential to steal personal information, passwords, private images, financial records and sensitive documents.

Prior knowledge	New words	
Learners can <ul style="list-style-type: none"> <li>• recognise and identify hardware</li> <li>• understand some simple reasons for connecting machines to a network.</li> </ul>	<ul style="list-style-type: none"> <li>• LAN</li> <li>• WAN</li> <li>• node</li> <li>• switch</li> <li>• hub</li> <li>• router</li> </ul>	<ul style="list-style-type: none"> <li>• wireless</li> <li>• UTP</li> <li>• jack</li> <li>• file server</li> <li>• modem</li> <li>• bandwidth</li> </ul>

### Assessment guidelines

Both Pass and Merit learners will need to be able to design a simple network. They should produce a simple schematic of the network, naming each component and its function. They can describe, in simple terms, how the network functions.

For assessment of this module, learners could design a home network, including a specified list of hardware, with a view to fulfilling the requirements the family might have for the network. Learners could then suggest appropriate management tasks and security measures which relate specifically to this network. Evidence would be in the form of a network diagram, with an index explaining all the components and their function. For Merit learners, this should also include explanatory notes to cover LO3 and LO4.

## Video or Animation for a Purpose (4296)

### Introduction

In this module, learners are introduced to either video-editing or animation software. The aim is to demonstrate to learners that both animation and video can be produced, edited and applied with the aid of computer software and hardware. By the end of the module, learners should have created a finished animation or piece of film, with a specific audience in mind.

### Learning objectives

Learning objectives	Pass/ Merit	Assessment evidence	Amplification of assessment criteria
1 Create a plan for video or animation	P	Simple storyboard (can be hand-drawn)	Learners must plan their video or animation on paper initially, and must limit their work to within the capability of the technology available to them.
2 Create source material for video or animation	P	See below	<p><b>Video:</b> this will involve filming, showing an awareness of the effect of focusing, zooming and the speed at which the camera is moved (to compensate for blurred images). Recorded footage should then be downloaded onto the computer.</p> <p><b>Animation:</b> learners can create or adapt an appropriate picture, considering size, shape and colour. The picture should be saved, either on a disk or the hard drive, for later retrieval.</p>
3 Produce video or animation with appropriate software	P	Final video or animation (saved to a portable storage device, such as a USB flash drive)	<p><b>Video:</b> learners need to be able to make informed decisions to remove certain pieces of footage, and to order the clips according to their plan.</p> <p><b>Animation:</b> learners should be able to use appropriate software to amend and alter the picture for different frames of the animation. The animation should include at least five frames. The software can be used to produce middle movements (e.g. tweening), but the learners must have manually created at least three of the frames themselves by editing their original picture.</p>
4 Add soundtrack or narration to video or animation	M	See above	<p><b>Video:</b> learners should be confident enough with the software to add a piece of appropriate music, or recorded narration, over their film.</p> <p><b>Animation:</b> if no additional software is available, music or narration could be demonstrated in a presentation to the class (including audio on a CD or other electronic storage peripheral), with the teacher providing the evidence for assessment.</p>
5 Demonstrate awareness of how the finished media text addresses a specific audience	M	Teacher evidence or printout	



## Getting started

As an introduction to this module, it would be beneficial for learners to explore websites and CD-ROMs, to consider how they use video and animation to demonstrate ideas, to give further information and to develop aesthetics.

Appropriate eSafety and ethical guidance should be given if learners are asked to obtain their own images. Further information can be found in section 5. You will need to demonstrate to the learners how to create a simple animation, or download and edit a piece of video. Any video-editing or animation-creation software could be used to deliver this module. However, straightforward software such as Windows Movie Maker and GIF Animator are good examples. Software which creates simple flash animations (e.g. CoffeeCup Firestarter), may also be used. If digital cameras are not available, learners can achieve effective results with a simple webcam. Teachers should discuss the importance of obtaining a person's consent prior to taking a photograph or recording video and sound. They should also discuss examples of when it is, and is not, appropriate to share content with others.

Prior knowledge	New words	
Learners can	<ul style="list-style-type: none"> <li>• animation</li> <li>• footage</li> <li>• edit</li> <li>• media player file</li> <li>• preview</li> </ul>	<ul style="list-style-type: none"> <li>• focus</li> <li>• download</li> <li>• insert frame</li> <li>• tween</li> </ul>

You should encourage learners to keep their ideas for videos or animations very simple, so that they are achievable with the software available without too much effort from the learner. This module is about the process the learners go through, rather than how complicated they make the final video or animation. It is about using and controlling the software (and/or hardware) to achieve a fairly simple end point, rather than the learner's ability to use complicated professional products.

It is important to limit the scope of this task, according to the time and resources available. A very effective simple animation can be created with a freeware GIF Animator, although for centres with video hardware and editing software, this module would be a useful introduction to video production work, which can be used in a number of subject areas. Showing examples of work from other learners would be particularly helpful. Learners must show that they can plan on paper before using the technology.

## Assessment guidelines

Pass learners should be showing competence using both software and hardware, but may not be able to solve all the problems they encounter. Merit learners will be able to show that they can create a multimedia text for a particular audience, and will be able to enhance their production with a music soundtrack or narrative.

You may have to split this assessment into smaller sessions for logistical reasons (time of filming, availability of editing facilities, etc.).

**On Track Learning Objectives Record Sheet**

Learner Name .....

Learners must achieve all Pass learning objectives to gain a Pass.

Learners must achieve all Pass and Merit learning objectives to gain a Merit.

*For an explanation of each learning objective, please see the amplification section of the relevant module.***Stage 1**

Learner was able to:	Pass/Merit	Please tick
<b>Documents for a Purpose (4289)</b>		
Create and format text which is suitable for a particular purpose	P	
Adjust properties to allow graphics, or other objects, to fit well within the document	P	
Insert table into a document	P	
Use advanced formatting features	M	
Use page-formatting options	M	
Adjust page formatting for a specific audience	M	
<b>Date of assessment</b>		
<b>Multimedia for a Purpose (4290)</b>		
Create a plan for a presentation	P	
Recognise and select appropriate source materials	P	
Incorporate transition and animation	P	
Incorporate timings, audio and 'build' effects	M	
Demonstrate a clear sense of audience and purpose	M	
<b>Date of assessment</b>		
<b>Spreadsheets for a Purpose (4291)</b>		
Design a spreadsheet with a specific purpose	P	
Create the spreadsheet	P	
Test the spreadsheet	P	
Modify the spreadsheet to make it suitable for its purpose	M	
Evaluate the spreadsheet	M	
<b>Date of assessment</b>		

<b>Databases for a Purpose (4292)</b>	
Identify a purpose for a database	P
Design, create and develop a database for a specific purpose	P
Utilise different field types	P
Test database	M
Demonstrate an awareness of data security	M
Transfer data between applications	M
<b>Date of assessment</b>	

## Stage 2

<b>Programming for a Purpose (4293)</b>	
Plan an interactive program using abstraction	P
Create and test an interactive program using selection, input and output	P
Predict the output of an interactive program that uses input and selection	P
Create and formally test an interactive program using selection, input and output	M
Correct (debug) a short interactive program containing more than one error	M
<b>Date of assessment</b>	

<b>Website Design for a Purpose (4294)</b>	
Create a series of connected web pages	P
Include links	P
Insert images	P
Demonstrate user awareness	M
Recognise HTML code	M
<b>Date of assessment</b>	

<b>Networks for a Purpose (4295)</b>	
Design a simple network	P
Identify the purpose and components of a network	P
Demonstrate understanding of management issues associated with networks	M
Understand network security issues	M
<b>Date of assessment</b>	

<b>View or Animation for a Purpose (4296)</b>	
Create a plan for video or animation	P
Create source material for video or animation	P
Produce video or animation with appropriate software	P
Add soundtrack or narration to video or animation	M
Demonstrate awareness of how the finished media text addresses a specific audience	M
<b>Date of assessment</b>	

Please sign and date this form when the learner has demonstrated, through an assessment test, that he/she can achieve the learning objectives of each module at Pass or Merit level without any additional assistance.

Teacher.....

Date .....

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## 4 Assessment procedures

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### Assessment tests

The Cambridge ICT Starters assessment tests, or assessments created by the centre and approved by Cambridge International (see section 2), must be completed within the suggested timescales, under supervised and controlled conditions. To conform with safe working practices in using display screen equipment, we recommend that you allow learners to take short approved breaks from working at their screen (5–10 minutes every hour, if appropriate), without leaving the assessment room. Such breaks may naturally form part of the working pattern, as learners study the assessment test material. The centre is responsible for maintaining security during such break periods.

Learners must complete the assessment tests under supervised and controlled conditions. It is possible to carry out the assessment during normal timetabled periods, during the normal working day, as long as all procedures are followed.

During the assessments, learners are not permitted access to their own files. Learners cannot receive any tuition after they have commenced the assessment.

### Preparation for assessment tests

Before using an assessment test, teachers must work through it, using similar hardware and software to that used by the learners, to:

- ensure that the hardware/software at the centre will enable the learners to achieve all the learning objectives
- ensure that the learners will understand the terminology
- ensure that other necessary resources (raw data, graphics, etc.) are available for learners, in order that they can carry out the activity under controlled conditions.

Centres should send any requests for special assessment requirements to Cambridge International, in writing, at least two months prior to the planned date for assessment.

### Administering the assessment

Centres are responsible for ensuring that the hardware and software to be used by learners is in full working order, and that it will enable them to fulfil all the learning objectives of the module, as specified in this syllabus. Errors as a result of faulty software or hardware will not be taken into consideration during the appeals procedures. In the event of a system crash, power cut or damage to equipment during the assessment, centres may allow learners another attempt at the assessment test.

Centres should ensure that stationery is available to their learners. Learners can use dictionaries, spellcheckers, their own notes, centre-prepared manuals on the software package, manufacturers' manuals or the software's Help function during the assessment. No other help can be given to learners during the assessment, unless there is an equipment failure.

Teachers will need to observe certain learning objectives within the modules, such as 'Save data'. Where appropriate, do this by checking the learners' files after the assessment has been completed, or during the assessment tests. Teachers must record this on the *Learning Objectives Record Sheet* and sign it. Submit the *Learning Objectives Record Sheet*, together with the learners' completed printouts (i.e. evidence of the assessment test), to Cambridge International for moderation. Each printout should include the learner's name and the date on which the assignment was carried out.

## Security issues

The teacher, or another suitably competent individual appointed by the centre, must be present throughout to supervise the assessment.

Learners must not communicate with one another in any way, and security of the individual learner's files must be ensured. They cannot ask for, or be given, help from the teacher, except in the case of a systems failure.

All assessment tests must be treated as confidential. Only use them at the time of assessment.

All work stored on the network or hard disk must be kept secure. Centres are advised to consider setting up passwords to control login procedures, and to ensure only authorised access to files.

Centres must ensure that:

- potential learners do not have access to the assessment tests
- at the end of each session, all assessment material, i.e. assessment tests and learners' completed work, is collected by the teacher.

Centres must keep learners' *Learning Objectives Record Sheets* and completed assessments securely between assessments and before submission to Cambridge International. In no circumstances should centres leave them with learners.

## Submission of learners' work

Centres should submit learners' work to Cambridge International on completion of the Stage 1 modules, the Stage 2 modules or all modules together which constitute the full qualification. Centres should put forward for moderation and certification only those learners whose work reaches the required standard, meeting all the specified learning objectives in each module.

Teachers are requested to send in portfolios for a sample of learners. These portfolios must contain the evidence for each learner in the sample (i.e. the evidence produced in the assessment test) and their completed *Learning Objectives Record Sheet*. Identify clearly each module for submission in the portfolio with the learner's name, centre, centre number and module details. All *Learning Objective Record Sheets* should identify the grade awarded by the teacher to each learner in the sample. In addition, the teacher must include a portfolio of assessment tests (i.e. the tasks given to the learners), including worked answers for each module submitted.

## Submission of the sample for moderation

The centre must submit to Cambridge International samples of centre-based assessment for moderation using the following criteria.

- (a) If there are 10 or fewer learners entered, all the centre-based records which contributed to the final assessment will be required.
- (b) If there are more than 10 learners entered, all the centre-based records which contributed to the final assessment will be required for the number of learners shown in the table below.

Number of learners entered	Number of learners whose work is required
11–50	10
51–100	15
above 100	20

The teacher or centre coordinator responsible, must select the 10, 15 or 20 learners covering the grade range for each module. Where there is more than one teacher involved in evidencing the work of learners, the sample must include, in equal number, learners assessed by all teachers.

If Cambridge International's moderator thinks it necessary, Cambridge International will request further samples of learners' work. The centre must despatch these as soon as the request is received.

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## 5 eSafety and ethical behaviour

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There are many positives to using ICT, but learners also need to be made aware of the potential dangers and learn how to keep safe when using computers, especially online. Learners also need to be given opportunities to consider their own behaviour and the impact that their actions can have on others.

The guidance given to learners will depend on their age, maturity, background and the content that is being delivered. Learners should be given clear instruction about what they should do if they feel unsafe when using ICT, this will include how they should report their concerns.

Cambridge International recommends that all schools have an acceptable-use policy, which describes in detail what learners and school employees should and should not do once they are given access to the school's computer network. Care should be taken to ensure the acceptable-use policy is followed during ICT Starters lessons. If concerns arise, teachers should follow the policy, including making contact with local child protection and law enforcement agencies if appropriate.

Internet filtering and monitoring tools should always be in place and anti-virus software should be up to date.

Outlined below are some of the issues that are experienced by young people online, although the information given should not be viewed as exhaustive.

**Personal information (including online 'friends' and grooming)** – learners should be made aware of the need to keep personal information private. For example, care should be taken to ensure details such as a learner's full name, date of birth, address, school, phone number, email address, password, location and likes or dislikes are not shared online and cannot be identified from photographs or videos. In particular, when using social media, learners should ensure their accounts are private and that they never share their personal information with people they do not know in the offline world. Importantly, if learners ever want to meet a 'friend' they have made online, they should always have a trusted adult present.

**Cyber bullying** – learners should be able to recognise cyber bullying and the impact it can have on others. Practical steps should be explained to learners about what they should do in the event that they become a victim of cyber bullying. This should include an explanation of the importance of not replying to messages or comments, blocking and reporting the bully, saving the evidence and telling a trusted adult. Learners should also recognise that care is needed to ensure that they do not become, either unintentionally or otherwise, a cyber bully themselves.

**Digital footprint** – the information learners are posting online, such as comments on social media, images, videos and blog posts, could be discovered by others. Learners should be made aware of the ease with which content can be shared and distributed more widely than originally intended, along with possible future implications, such as when applying for jobs or for further education. Advise learners that all images shared electronically can become public. They should not share any photograph that they would be embarrassed for a wider audience to see.

**Inappropriate or illegal content** – in addition to the guidance outlined above, discussions may be undertaken with older learners about the damaging effects and consequences of accessing and sharing inappropriate or illegal content. As well as being aware of potential legal consequences, learners should also give consideration to issues such as sharing images of or information about their peers. Learners should be advised that all images, opinions and information that is shared electronically can be easily copied and further distributed by others, which could lead to harm or embarrassment being caused to the subject of the material.



**Viruses, malware and hacking** – learners should be given practical steps on how to protect their devices, data and user accounts. This should include advice on choosing a strong password, about how to avoid phishing and pharming, and about keeping their system up to date.

Further details, including teaching resources, can be found on a range of websites. Some examples from the UK context include:

- [www.thinkuknow.co.uk/](http://www.thinkuknow.co.uk/)
- [www.saferinternet.org.uk/](http://www.saferinternet.org.uk/)
- [www.childnet.com/](http://www.childnet.com/)
- [www.nspcc.org.uk/preventing-abuse/keeping-children-safe/online-safety/](http://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/online-safety/)

**Note:** The guidance that these websites provide is applicable worldwide, although references to CEOP refer to the UK's National Crime Agency and their approach to combating online child exploitation and crime. Teachers should also seek further resources that are local to them and are relevant to the ages of their learners.

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## 6 What else you need to know

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This section is an overview of other information you need to know about this syllabus.

### Before you start

#### Previous study

We do not expect learners starting this course to have previously studied ICT.

#### Guided learning hours

We do not give defined learning hours in any of the modules as learners of different ages, with differing levels of experience and using ICT in different curriculum areas, may progress at different paces.

#### Support materials

Syllabuses, past question papers and examiner reports to cover the last examination series are on the Syllabus and Support Materials DVD, which we send to all Cambridge schools. These materials are also on our public website.

Go to our public website at [www.cambridgeinternational.org/programmes-and-qualifications/cambridge-secondary-1/cambridge-ict-starters/](http://www.cambridgeinternational.org/programmes-and-qualifications/cambridge-secondary-1/cambridge-ict-starters/) to download the following materials:

- current and future syllabuses
- specimen papers
- frequently asked questions
- resource lists.

For teachers at registered Cambridge schools, additional support materials for specific syllabuses are available. For Teacher Support, go to <https://teachers.cie.org.uk> (username and password required) to find the following:

- syllabuses
- specimen papers
- frequently asked questions
- schemes of work
- online discussion forums
- resource lists.

#### Resource lists

We work with publishers providing a range of resources including textbooks, websites, CDs, etc. Lists of endorsed, recommended and suggested resources are available on our website as soon as they are published. The resource lists can be accessed from our public and Teacher Support websites. The resource lists can be filtered to show all resources or just those which are endorsed or recommended by Cambridge International. Resources endorsed by Cambridge International go through a detailed quality assurance process and are written to align closely with the Cambridge International syllabus they support.

#### Training

We offer a range of support activities for teachers to ensure they have the relevant knowledge and skills to deliver our qualifications. See [www.cambridgeinternational.org/cambridge-professional-development/events-and-training-calendar/](http://www.cambridgeinternational.org/cambridge-professional-development/events-and-training-calendar/) for further information.

## Changes to this syllabus for 2018

The syllabus has been updated. This is version 1, published January 2018

<b>Changes to syllabus content</b>	<ul style="list-style-type: none"> <li>• A section on eSafety and eResponsibility has been added to the syllabus (section 5). It is intended this content will be integrated into the teaching of all modules.</li> <li>• Some ICT terminology has been revised to bring it up to date and some editorial changes have been made to improve clarity.</li> <li>• The Initial Steps module 4272 previously named 'Starting Control' has been renamed 'Starting Programming' and the content updated.</li> <li>• The Next Steps module 4282 previously named 'Exploring Control' has been renamed 'Exploring Programming' and the content updated.</li> <li>• The On Track module 4293 previously named 'Control for a Purpose' has been renamed 'Programming for a Purpose' and the content updated.</li> </ul>
<b>Changes to assessment (including changes to specimen papers)</b>	<ul style="list-style-type: none"> <li>• New assessments will be available for Initial Steps module 4272, Next Steps module 4282 and On Track module 4293 from January 2019.</li> <li>• Existing assessments for the other modules may still be used.</li> </ul>

**You are strongly advised to read the whole syllabus before planning your teaching programme.**

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