

# OCR Cambridge National in Information Technologies

Level 1/2 Cambridge National Certificate in Information Technologies (120 GLH)

Code J808

DRAFT

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# 1 Qualification overview

## 1.1 OCR Level 1/2 Cambridge National Certificate in Information Technologies - at a glance

<b>Qualification number</b>	603/1311/0	<b>OCR Entry code</b>	J808
<b>First registration date</b>	01/09/2017	<b>Approved age range</b>	14-16
<b>Guided learning hours (GLH)</b>	120	<b>Performance information</b>	See section 2 <a href="#">performance information</a>
<b>Total qualification time</b>	160	<b>Eligible for funding</b>	It's designed to meet the funding requirements of a 14-16 study programme.
<b>This qualification has been designed</b>	<ul style="list-style-type: none"> <li>for learners aged 14-16 on a full-time study programme who wish to develop applied knowledge and practical skills in using information technologies</li> <li>to meet the Department for Education's characteristics for a Technical Award</li> </ul>		
<b>This qualification is suitable for learners</b>	<ul style="list-style-type: none"> <li>who want to progress onto other related study, such as qualifications in IT, Digital Media, Computer Science</li> </ul>		
<b>Entry requirements</b>	Learners who are taking courses leading to this qualification should normally have a corresponding Key Stage 3 Programme of Study within the National Curriculum.		
<b>Qualification structure</b>	There are two units of assessment. Learners must complete both units of assessment to achieve the qualification		
<b>Assessment method/model</b>	Assessment unit R012 is assessed by an exam and marked by us. Assessment unit R013 is marked by your centre staff and we will moderate it.using the OCR repository or postal moderation.		
<b>Exam series each year</b>	<ul style="list-style-type: none"> <li>January</li> <li>June</li> </ul>		
<b>Grading</b>	All results are awarded on the following scale: Level 2 – Distinction* (*2), Distinction (D2), Merit (M2), Pass (P2) Level 1 – Distinction (D1), Merit (M1), Pass (P1) and Unclassified.		
<b>Exam resits</b>	Learners can resit the examined assessment unit once before they complete the qualification. We'll use the best result from either sitting to calculate the certification result.		
<b>Repeat submission of learner's work</b>	<p>If you and the learner feel they have not performed at their best during the assessment of the internally assessed unit (R013) the learner can, at your discretion, improve their work and resubmit it to you for assessment. You must be sure it's in the learner's best interests to re-attempt the assessment.</p> <p>For information about feedback see section 6. The final piece of work must be completed solely by the learner and it is unacceptable for teachers to detail specifically what amendments should be made.</p>		

### OVERVIEW

The collection and communication of data and information happens all around us. Technology underpins how it's collected and communicated nearly all of the time. It can be seen in all walks of life, from a wearable fitness tracker recording how many steps you have taken, your mobile phone provider recording your usage to create your bill or an online retailer being able to target you with specific promotions based on your purchase history. Knowing how and why data and information is gathered and being able to turn raw data into something meaningful is essential as the learner moves through education and into employment. To be able to do this the learner will need to have the confidence to use a range of information technology that is currently available, as well as being adaptable and resilient enough to deal with the rapid advances.

### What will this qualification teach the learner?

This qualification will teach the learner what different technology could be used, why they should use it and how to make best use of it, to gather, store, manipulate and present data; this is known as data management.

They will learn about tools and techniques for use in different digital hardware and software technologies, and how these can be integrated to create digital solutions to manage and communicate data and information. They will also be taught what data and information are and the legal and moral considerations when using technology to gather, store and present data and information, and how to mitigate the risks of cyber-attacks. Through this qualification they will be able to select and use the most appropriate technology safely and effectively, to complete a data management task, such as a cable TV provider monitoring customers' viewing to make recommendations for additional packages in the customer's subscription.

They will also learn to follow a project life-cycle of initiation, planning, execution and evaluation to complete a data management task and use their skills, knowledge and understanding of technology to complete each of the stages of the project life-cycle.

The skills, knowledge and understanding they will develop through this qualification are very relevant to both work and further study. They will support them in a range of subject areas such as A Levels in Business or Geography, or Cambridge Technicals in IT. They can also support their progression into employment through Apprenticeships in areas such as Digital Marketer or Business Administrator.

### Who is this qualification for?

Learners can take this qualification if they are 14 years old and moving into their Key Stage 4 programme of study and looking to combine GCSE/vocational options with a vocational qualification in information and communication technologies.

If their interests are primarily around the development of computer networks or control systems and/or the creative and innovative design and creation of software programme solutions, then they should consider completing a GCSE in Computer Science. That will help them develop their computational analysis skills to allow them to solve problems and design systems and solutions.

If they are more creatively driven and have interests in the Media sector, including film, television, web development, gaming and animation, then they should consider completing the Cambridge Nationals in Creative iMedia. That teaches them to use IT to create digital solutions in the pre-production, production and post-production development life cycle of various media products.

## 2 About this qualification

This specification is written for the teacher and for this qualification we assume the teacher is the assessor. It contains what you need to know about the planning, delivery and assessment of this qualification.

To access information on how to administer these qualifications please follow the link to the Administration area <http://www.ocr.org.uk/administration/>.

There is information for the learner about the purpose of the qualification and the assessments in Appendix B.

### 2.1 Qualification size

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The size of the qualification is described in terms of Guided Learning Hours (GLH) and Total Qualification Time (TQT).

GLH indicates the approximate time (in hours) the teacher will spend teaching, supervising, invigilating and directing learners so they can complete the qualification. We have worked with people who are experienced in delivering related qualifications to determine what content needs to be taught and how long it will take to deliver. (The invigilated exam counts as GLH.)

TQT is the total amount of time (in hours) you can reasonably expect a learner to achieve the qualification, taking account of summative assessment, any time for unsupervised learning and activities as well as the number of guided learning hours.

The qualification is 120 GLH and 160 TQT.

### 2.2 Availability and funding

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To check if these qualifications are approved for delivery and funding in your country you must visit the following websites for the latest information:

England

- [Register of Regulated Qualifications](#) – for England and Northern Ireland
- Department for Education [Section 96](#) – for confirmation of the approval of qualifications to be delivered to specific age ranges.
- [Education Funding Agency](#) for public funding information for learners (0-18) in England

Wales

- [Qualifications in Wales](#) database (QiW) - for information on approved and designated qualifications in Wales including funding

Northern Ireland

- [Register of Regulated Qualifications](#) – for England and Northern Ireland
- [NIEFQAN](#) – Approval of qualifications by the Department of Education in Northern Ireland
- [Department for the Economy](#) for public funding in Northern Ireland

Use the Qualification Number (QN) when you're looking for information on qualification eligibility for public funding.

If you have any queries about funding for these qualifications email us at [funding@ocr.org.uk](mailto:funding@ocr.org.uk).

## 2.3 Delivery in Wales and Northern Ireland

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Learners in Wales and Northern Ireland shouldn't be disadvantaged by terms, legislation or aspects of government that are different from those in England.

Where such situations might occur, we've used neutral terms so learners may apply whatever is appropriate and current to their own situation.

## 2.4 Language

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These qualifications and any associated assessment materials are available in English only. Only answers provided in English will be assessed.

## 2.5 Performance information

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We've designed these qualifications to meet the Department for Education (DfE) requirements for qualifications in the Technical Award category of the 14 to 16 performance tables.

You'll find information on:

- performance tables for England on the Department for Education website
- performance points for Northern Ireland on the Department for the Economy website
- performance measures for Wales on Qualifications in Wales database (QiW). If you have any queries about this performance information then please email [ims@wales.gsi.gov.uk](mailto:ims@wales.gsi.gov.uk).

# 3 Learning outcomes, teaching content and delivery information

## 3.1 Holistic delivery and synoptic assessment

This qualification is about applying understanding and skills to use technologies to select data, manipulate, store, analyse and present it as information, and follow a project life cycle to structure how it's done.

The learning outcomes and teaching content are not separated into individual units of teaching. There are two assessments to be taken and we refer to these as units of assessments. (We show you in the table below how the content is assessed.) This is not linear assessment, each assessment can be taken in different series and there are no terminal rules.

We've taken this direction to support a holistic approach to delivery and a synoptic approach to assessment. We want learners to develop their appreciation and understanding of the connections between the different elements of learning and show they can go on to apply what they learn from this qualification to new and different situations and contexts.

Project life cycle stage	Understanding required	Skills required
Initiate and plan	Understand the tools and techniques that can be used to initiate and plan solutions	To be able to initiate and plan a solution to meet an identified need
Execute	Understand how data and information can be collected, stored and used  Understand the factors to be considered when collecting, processing and storing data and information	To be able to import and manipulate data to develop a solution to meet an identified need
Communicate	Understand the different methods of processing data and presenting information	To be able to select and present information in the development of the solution to meet an identified need
Iterative review and final review		To be able to iteratively review the development of the solution
	<b>External assessment</b>	<b>Internal assessment</b>
	Understanding will be directly assessed through an exam.  Questions will test knowledge and understanding and the ability to apply understanding and draw on the experience gained from developing the skills	Skills will be directly assessed through an OCR set- assignment.  Work will be judged against marking criteria that will measure how effectively skills, knowledge and understanding are used to complete a project



While we don't prescribe how you should deliver this qualification it has been designed to be delivered through a project-based approach to teaching and learning. We will help you develop your delivery approach through our resources. We've talked with centres who deliver our qualifications about the benefits of a project-based approach to learning. They've told us:

- it makes the process of learning and application more meaningful and motivating
- it's relevant to and reflective of work
- it reinforces the synoptic application of skills, knowledge and understanding.

Synoptic assessment is an important aspect of the qualification. It's based upon demonstrating a broad understanding of the subject. The learner will have to draw on the skills, knowledge and understanding that have been studied across the specification and utilise them in an appropriate and relevant way to complete both the exam and the assignment.

We will also help you to plan how to integrate learning required for other qualifications or to develop and maintain the skills that are essential for further study and work, particularly English and maths skills. We will signpost opportunities for English and maths skills practice in a delivery guide, which you can access from the qualification page of our website.

## 3.2 Aims of units of assessment

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### **Assessment unit R012 - Understanding tools, techniques, methods and processes for technological solutions**

Learners will sit an exam to assess their knowledge and understanding of different technologies (hardware and software applications), and tools and techniques used to select, store, manipulate and present data and information (e.g. using formulae to link data sets).

They will also be assessed on the stages of a project life cycle and the methods and processes that can be used to complete each of these which, combined with their understanding of information technologies, will prepare them for developing technological solutions.

They will need to understand the legal, moral, ethical, and security issues that can impact on collecting, storing and using data, and also the different risks associated with data and storage and how these can be mitigated.

This knowledge and understanding will help them to make decisions and appropriate choices when developing a technological solution, which they will be asked to do in the practical assignment.

### **Assessment Unit R013 – Developing technological solutions**

This assessment focuses on how effectively learners use their skills when developing a technological solution.

They will be given a project to develop a technological solution that processes data and communicates information.

They will follow the project life cycle stages of initiation/planning, execution, communication and evaluation, demonstrating the practical skills they have acquired such as carrying out SWOT analyses, creating GANTT charts, developing online surveys, or presenting data through web-based technologies; keeping their project on track through on-going, iterative reviews.

Learners will use different hardware and software technologies to interrogate and model data to create, integrate and format a technological solution for data/information processing and communication.

The knowledge and understanding in this qualification will help them to make appropriate choices and decisions about the technological solution(s) they will develop. The skills in the qualification will help them to work effectively when developing a solution. Considering how their understanding can help them use their skills and how using their skills can improved their understanding, will help learners succeed in this qualification.

### 3.3 Use of i.e./e.g. in teaching content

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The teaching content describes what has to be taught to ensure that learners are able to access the highest marks.

Anything which follows an i.e. details what must be taught as part of that area of content.

Anything which follows an e.g. is illustrative; it should be noted that where e.g. is used, learners must know and be able to apply relevant examples in their work, though these do not need to be the same ones specified in the teaching content.

**Where content will be part of the exam** and the content contains i.e. and e.g. under specific areas of content, the following rules will be adhered to when setting questions:

- a direct question may be asked where the teaching content is shown with an i.e.
- a direct question will not be asked about a specific example where teaching content is shown as an e.g.. Any questions relating to the area of content will offer learners the opportunity to provide their own examples as the content has not specified with which examples they should be familiar.

## 3.4 Learning outcomes, teaching content and delivery guidance

### 3.4.1 Initiate and plan

Teaching content		Delivery guidance including KS3 expected prior learning															
<b>Learning Outcome 1: Understand the tools and techniques that can be used to initiate and plan solutions</b>																	
1.1	<p>Learners must be taught:</p> <p>Stages of the project life cycle and the tasks carried out in each stage i.e.</p> <ul style="list-style-type: none"> <li>• initiation</li> <li>• planning</li> <li>• execution</li> <li>• evaluation</li> <li>• benefits of following a project life cycle</li> </ul>	<p>There are many different project life cycles. The stages defined are the stages which apply to the knowledge required for this taught content.</p> <p>These stages are used in all learning outcomes.</p>															
1.2	<p>The interaction and iteration between the stages of the project life cycle .i.e.</p> <ul style="list-style-type: none"> <li>• iteration and interaction occurs between the stages of the project life cycle</li> <li>• iteration and interaction can only occur between any given stage and the stage before or after</li> <li>• each stage must be completed before moving to the next stage in the life cycle. If any part of the stage is not complete, then it is not possible to move through to the next stage</li> </ul>																
1.3	<p>The inputs and outputs of each stage of the project life cycle. i.e.</p> <table border="1"> <thead> <tr> <th></th> <th>Input</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>Initiation</td> <td>User requirements User constraints</td> <td>Feasibility report &amp; legislation implications Phase review and next steps</td> </tr> <tr> <td>Planning</td> <td>Feasibility report &amp; legislation implications Next steps</td> <td>Project and test plans Constraints list Phase review</td> </tr> <tr> <td>Execution</td> <td>Project and test plans Constraints list</td> <td>Deliverable product Test results Phase review</td> </tr> <tr> <td>Evaluation</td> <td>Deliverable product Test results</td> <td>Release of deliverable product User documentation Final review report</td> </tr> </tbody> </table>		Input	Output	Initiation	User requirements User constraints	Feasibility report & legislation implications Phase review and next steps	Planning	Feasibility report & legislation implications Next steps	Project and test plans Constraints list Phase review	Execution	Project and test plans Constraints list	Deliverable product Test results Phase review	Evaluation	Deliverable product Test results	Release of deliverable product User documentation Final review report	
	Input	Output															
Initiation	User requirements User constraints	Feasibility report & legislation implications Phase review and next steps															
Planning	Feasibility report & legislation implications Next steps	Project and test plans Constraints list Phase review															
Execution	Project and test plans Constraints list	Deliverable product Test results Phase review															
Evaluation	Deliverable product Test results	Release of deliverable product User documentation Final review report															

Teaching content		Delivery guidance including KS3 expected prior learning
1.4	<p>Initial project considerations i.e.</p> <ul style="list-style-type: none"> <li>• SMART (Specific, Measurable, Achievable, Realistic, Time) goals</li> <li>• User requirements</li> <li>• Success criteria</li> <li>• Constraints/Limitations i.e., time, resources, regulations, security/risk management, mitigation of risks.</li> <li>• The purpose and importance of setting objectives</li> </ul>	<p>Objective setting is one task within the Initiation stage. Learners should be able to explain user requirements and produce success criteria in a given context. They should be able to identify constraints and justify steps taken to mitigate those constraints.</p>
1.5	<p>Planning tools and the software types used to develop project plans i.e.</p> <ul style="list-style-type: none"> <li>• Formal i.e. <ul style="list-style-type: none"> <li>○ Gantt</li> <li>○ PERT (Project Evaluation and Review Technique)</li> <li>○ CPA (Critical Path Analysis)</li> <li>○ VENN diagrams</li> <li>○ Software types used i.e. <ul style="list-style-type: none"> <li>▪ Project management software</li> <li>▪ Spreadsheets</li> </ul> </li> <li>○ Components of the planning tools</li> </ul> </li> <li>• Informal i.e. <ul style="list-style-type: none"> <li>○ Task list</li> <li>○ Mind map</li> <li>○ Visualisation diagram</li> <li>○ Flow charts</li> <li>○ Software types used i.e. <ul style="list-style-type: none"> <li>▪ Project management software</li> <li>▪ Spreadsheets</li> <li>▪ Word processors</li> </ul> </li> <li>○ Components of the planning tools</li> </ul> </li> <li>• Strengths and weaknesses of planning tools</li> </ul>	<p>Learners should understand the different planning tools that are available. They should be aware of the differing components of each planning tool and how these can be used to create planning documentation. <b>Planning methodologies do not need to be learnt in detail.</b></p> <p>Learners should understand the benefits and limitations of planning tools. Learners should be able to evaluate the different planning tools in relation to a given contexts, referring to the benefits and limitations of the tools. Learners should be able to justify the selection of the planning tool(s).</p>
<b>Learning Outcome 2: To be able to initiate and plan a solution to meet an identified need</b>		
2.1	<p>Learners should be taught how to initiate a project by analysing the requirements to a given context i.e.:</p> <ul style="list-style-type: none"> <li>• Key word analysis e.g. select the important aspects of the brief</li> <li>• Mind map</li> <li>• Carry out a SWOT analysis</li> <li>• How to create SMART objectives</li> <li>• Scoping project into tasks and actions</li> <li>• Creation of schedule for solution including: <ul style="list-style-type: none"> <li>○ Tasks</li> <li>○ Activities</li> <li>○ Workflow</li> <li>○ Timescales</li> <li>○ Resources</li> <li>○ Milestones</li> <li>○ Contingencies</li> </ul> </li> </ul>	<p>Learners should be able to select the appropriate tools and techniques to allow them to initialise and plan a project effectively. It is not necessary for all the tools within the teaching content to be used during the internal assessment. It is the appropriate use of the tools to create a detailed project plan that is important.</p>

Teaching content	Delivery guidance including KS3 expected prior learning
<p>2.2 Learners should be taught how to mitigate risks through the planning process i.e.</p> <ul style="list-style-type: none"> <li>• Time issues e.g. use of contingencies, workflow</li> <li>• Resources e.g. hardware, software</li> <li>• Regulations e.g. how to conform to various regulations, designs for how data will be protected</li> <li>• Security e.g. use of passwords to protect data from being viewed and/or edited</li> <li>• Ethical and moral e.g. avoiding defamation of character, misuse of data and equipment, bias</li> </ul>	
<p>2.3 Learners should be taught how to use planning documentation i.e.</p> <ul style="list-style-type: none"> <li>• Use of technology to support planning i.e. <ul style="list-style-type: none"> <li>○ project planning software e.g. Project Libre, Microsoft Project, Gantt Project, Microsoft Excel</li> <li>○ flow charts for planning and data e.g. critical path analysis (CPA)</li> <li>○ Data dictionaries</li> <li>○ Asset log e.g. hardware required, software required, images required</li> <li>○ Mock up e.g. digital design of screen layouts</li> <li>○ House style e.g. colours, fonts, headings, borders, tables, image branding</li> </ul> </li> <li>• Paper based i.e. <ul style="list-style-type: none"> <li>○ Visualisation diagram</li> <li>○ Wire frames</li> <li>○ Flow charts e.g. critical path analysis (CPA)</li> <li>○ VENN diagram of different interlinking parts in the project</li> </ul> </li> </ul>	<p>Learners should be able to select and use appropriate technology to create the planning documentation. Access to the higher grading bands will be restricted if there is little use of appropriate technology during the initialisation and planning phase.</p>
<p>2.4 Learners should be taught how to undertake iterative testing for i.e.</p> <ul style="list-style-type: none"> <li>• Functionality - how the various aspects of the solution work</li> <li>• Usability - how easily the user can use the aspects of the solution</li> <li>• Accessibility - how the solution caters for “non-standard” users</li> <li>• Creating and using a Test Plan i.e. <ul style="list-style-type: none"> <li>○ Test number</li> <li>○ Purpose</li> <li>○ Expected result</li> <li>○ Actual result/Evidence</li> <li>○ Resolution</li> <li>○ Retest number/Evidence</li> <li>○ Using i.e. <ul style="list-style-type: none"> <li>▪ Normal data</li> <li>▪ Erroneous data</li> <li>▪ Extreme data</li> </ul> </li> </ul> </li> </ul>	<p>Learners should be able to create a test plan for their solution which can then be used for and evidenced during the execution phase of the project.</p>

## 3.4.2 Execute

Teaching content		Delivery guidance including KS3 expected prior learning
<b>Learning Outcome 3: Understand how data and information can be collected, stored and used</b>		
3.1	<p>Learners must be taught:</p> <p><b>Data</b></p> <ul style="list-style-type: none"> <li>• What data is</li> <li>• Data types and appropriateness of the use of these in a given context i.e.               <ul style="list-style-type: none"> <li>○ alpha numeric (text)</li> <li>○ numeric (integer, real for example currency, percentage, fraction),</li> <li>○ date/time,</li> <li>○ limited choice (e.g. drop down lists, radio buttons, tick list)</li> <li>○ object</li> <li>○ logical/Boolean (e.g. yes/no true/false) types</li> </ul> </li> </ul>	<p><i>Learners should be aware of the differing data types from their KS3 study. They need to apply this knowledge to enable informed decisions to be made relating to the appropriate use of these in a given contexts.</i></p> <p>Data is raw facts and figures before they have been processed.</p>
3.2	<p><b>Information</b></p> <ul style="list-style-type: none"> <li>• What information is</li> <li>• How data and information are related i.e.               <ul style="list-style-type: none"> <li>○ Information is in context whilst data has no context</li> <li>○ Information is data which has been coded / structured</li> <li>○ Data must be processed to become information</li> </ul> </li> </ul>	<p>Information is made by taking data and processing it.</p> <p>Information = data + [structure] + [context] + [meaning].</p>
3.3	<p>Methods used to collect and store data and information, and the appropriateness of the use of these in a given context i.e.:</p> <ul style="list-style-type: none"> <li>• Methods i.e.               <ul style="list-style-type: none"> <li>○ Questionnaires / surveys (online and hard copy)</li> <li>○ Sensors</li> <li>○ Interviews</li> <li>○ Consumer panels</li> <li>○ Loyalty schemes</li> <li>○ Statistical and trends/reports e.g. Government departments</li> <li>○ Secondary research methods (e.g. search engines)</li> </ul> </li> <li>• Appropriateness of methods               <ul style="list-style-type: none"> <li>○ Suitability, strengths, and weaknesses</li> </ul> </li> </ul> <p>Information Technology (IT) used to support data and information collection, and the appropriateness of the use of these in context i.e.:</p> <ul style="list-style-type: none"> <li>• Barcode/QR code readers</li> </ul>	<p>Learners should be aware of the differing methods of collecting data and information and how IT can be used to support these activities.</p> <p>They should understand the advantages and disadvantages of each method and be able to select, justifying their choice, the collection method to be used for a given context.</p> <p>Learners should, as part of this process, be able to compare the suitability and use of two or more collection methods.</p>

Teaching content		Delivery guidance including KS3 expected prior learning
	<ul style="list-style-type: none"> <li>• Web-based surveys</li> <li>• Wearable technology</li> <li>• Mobile technology</li> </ul>	
3.4	<p>Storage and the appropriateness of the use of these in context i.e.:</p> <ul style="list-style-type: none"> <li>• Cloud</li> <li>• Physical devices</li> </ul>	Learners should understand the differing storage methods for data and information. They should be able to select, justifying their selection, the most appropriate method of storage for a given context.
3.5	<p>Use of data in a given context including Big Data</p> <p>Applications and interaction of data stores i.e.</p> <ul style="list-style-type: none"> <li>• Law enforcement</li> <li>• Education</li> <li>• Health and fitness</li> <li>• Shopping</li> <li>• Entertainment / leisure</li> <li>• Lifestyle</li> <li>• Benefits and drawbacks of the use of data</li> </ul>	<p>Big data is used to describe data sets which are so large or complex that traditional data processing software cannot deal with them.</p> <p>Learners should be aware of the differing applications of data and how these stores of data can interact to share data and information. They should be aware of the difference between the interaction between big data sets and the holding of small data sets in given contexts. For example, retailers capture information on consumer habits through in-store loyalty cards. The data can then be used by manufacturers to target marketing and offers.</p> <p>Learners should be aware, for example, that errors in data can have a negative impact but the use of complete and correct data can have positive impacts.</p>
<p><b>Learning Outcome 4: Understand the factors to be considered when collecting, processing and storing data and information</b></p>		
4.1	<p>Learners must be taught:</p> <p>Types of threats i.e.</p> <ul style="list-style-type: none"> <li>• Denial of Service (DoS)</li> <li>• Worm</li> <li>• Botnet</li> <li>• Malware (adware, spyware, click jacking)</li> <li>• Social engineering (blagging, pharming, phishing, shouldering, hacking, scamming)</li> <li>• Unauthorised access</li> <li>• Virus</li> <li>• Fraudulent websites</li> <li>• Fake/hoax emails</li> <li>• Identify theft</li> </ul>	Learners should understand the types of threats that should be considered when collecting, processing and storing information.

Teaching content	Delivery guidance including KS3 expected prior learning
<ul style="list-style-type: none"> <li>• Data destruction, manipulation, modification, theft</li> </ul>	
<p>4.2 The vulnerabilities –which can be exploited in a cyber-security attack i.e.</p> <ul style="list-style-type: none"> <li>• Environmental (e.g. natural disasters, flooding)</li> <li>• Physical (e.g. theft)</li> <li>• System (e.g. weak passwords, insecure software applications, insecure modems, social engineering)</li> </ul>	<p>Learners should understand that vulnerabilities can be exploited by an attacker. For example, storage device could be vulnerable to physical attack if it is not adequately secured (for example, locking in a safe).</p>
<p>4.3 The impacts of a cyber-security attack i.e.</p> <ul style="list-style-type: none"> <li>• Loss <ul style="list-style-type: none"> <li>○ Financial</li> <li>○ Data</li> <li>○ Reputation</li> </ul> </li> <li>• Disruption <ul style="list-style-type: none"> <li>○ operational</li> <li>○ financial</li> <li>○ commercial</li> </ul> </li> <li>• Safety <ul style="list-style-type: none"> <li>○ individuals</li> <li>○ equipment</li> <li>○ finance</li> </ul> </li> </ul>	<p>Learners should understand that cyber-security attacks can result in a range of impacts. For example, personal data loss can result in identity theft which could have financial and reputational impacts.</p>
<p>4.4 Prevention measures i.e.</p> <ul style="list-style-type: none"> <li>• Physical i.e. <ul style="list-style-type: none"> <li>○ Biometric access device</li> <li>○ Emerging measures</li> </ul> </li> <li>• Logical i.e. <ul style="list-style-type: none"> <li>○ Access rights and permissions including authentication, usernames and passwords</li> <li>○ Anti-virus software</li> <li>○ Encryption</li> <li>○ Secure backups of data</li> <li>○ Emerging measures</li> </ul> </li> <li>• Secure destruction of data i.e. <ul style="list-style-type: none"> <li>○ Over writing</li> <li>○ Magnetic wipe</li> <li>○ Physical destruction</li> </ul> </li> </ul>	<p>Learners should be able to identify risks and discuss the impacts of these risks in any given context. They should also be able to justify the steps taken to mitigate those risks.</p>
<p>4.5 Current legislation, its implications and applications i.e.</p> <ul style="list-style-type: none"> <li>• Current relevant IT legislation at time of delivery i.e. <ul style="list-style-type: none"> <li>○ Legal i.e. protection of; individuals, organisations, technological equipment, information, and intellectual property</li> <li>○ Ethical and moral i.e. avoiding defamation of character, misuse of information and equipment</li> </ul> </li> </ul>	<p>Learners should know the current legislation / Acts that can be used when collecting, processing and storing data and information. They should also be able to apply this knowledge to given contexts.</p> <p>Learners should be able to explain the implications of the current relevant IT legislation including when dealing with cyber-security attackers.</p>



Teaching content		Delivery guidance including KS3 expected prior learning
		<i>Learners should be aware of the Copyright, Designs and Patents Act from their Key Stage 3 study. They will need to apply this knowledge, and the knowledge acquired in this taught content, to enable informed decisions to be made about the application of these legislations to any given context.</i>
4.6	Importance of validity, reliability and bias when collecting and using data and information	Learners need to understand the implications of validity, reliability and bias of data and information when collecting, processing and using their own data. They should also be aware of these factors when assessing any external sources of data and information they may use, for example, 'fake news'.
<b>Learning Outcome 5: To be able to import and manipulate data to develop a solution to meet an identified need</b>		
5.1	<p>Learners should be taught how to create, edit and delete data using appropriate software tools and techniques including:</p> <p>Spreadsheet software i.e.</p> <ul style="list-style-type: none"> <li>• Functions i.e. SUMIF, SUMPRODUCT, VLOOKUP, INDEX, MATCH, CONCATENTE, TEXTJOIN,</li> <li>• Absolute cell referencing</li> <li>• Linking worksheets</li> <li>• What If</li> <li>• Macros i.e. <ul style="list-style-type: none"> <li>○ Close/Open objects</li> <li>○ Carry out repetitive processes</li> <li>○ Print and close</li> </ul> </li> <li>• Import data i.e. other file types, www, surveys, social media, sensors, emerging technologies</li> <li>• Link to external data</li> <li>• How to present combined data using i.e. <ul style="list-style-type: none"> <li>○ Pivot Charts/Tables</li> <li>○ Dynamic charts</li> <li>○ Combination charts</li> </ul> </li> <li>• Hide/ Unhide columns rows</li> <li>• Applying security measure i.e. <ul style="list-style-type: none"> <li>○ to sheets</li> <li>○ to cells</li> <li>○ to open documents</li> <li>○ to allow read only access</li> </ul> </li> <li>• Export and link data to other applications/technologies (e.g. hyperlink a spreadsheet to a presentation, meaning that the data within the presentation is automatically updated with any subsequent changes to the data)</li> </ul>	<p><i>The following content is expected prior learning at Key Stage 3.</i></p> <ul style="list-style-type: none"> <li>• <i>Basic formula (Addition, Subtraction, Multiply, Division, Using multiple cells)</i></li> <li>• <i>Relative cell referencing</i></li> <li>• <i>Appropriate naming conventions</i></li> <li>• <i>Basic and appropriate formatting of appearance,</i></li> <li>• <i>Built in functions (SUM, MIN, MAX, AVERAGE, LOWER, TRIM)</i></li> <li>• <i>BODMAS</i></li> <li>• <i>Simple charts (bar chart, pie chart, line graph)</i></li> <li>• <i>Data types</i></li> <li>• <i>Flat file Database</i></li> <li>• <i>Boolean operators in calculations</i></li> <li>• <i>Primary Key</i></li> <li>• <i>Single table query</i></li> <li>• <i>Sorting data</i></li> <li>• <i>Report from Simple query</i></li> <li>• <i>Report from single table</i></li> <li>• <i>Boolean operators in queries</i></li> <li>• <i>House style</i></li> </ul>

Teaching content	Delivery guidance including KS3 expected prior learning
<p>Database software i.e.</p> <ul style="list-style-type: none"> <li>• Relational Database i.e. <ul style="list-style-type: none"> <li>○ two tables or more</li> <li>○ foreign keys</li> </ul> </li> <li>• Import data from i.e. <ul style="list-style-type: none"> <li>○ other files types,</li> <li>○ www</li> <li>○ surveys</li> <li>○ social media</li> <li>○ sensors</li> <li>○ emerging technologies</li> </ul> </li> <li>• Data validation techniques i.e. <ul style="list-style-type: none"> <li>○ Presence check</li> <li>○ Length check</li> <li>○ Format check</li> <li>○ Lookup value</li> <li>○ Range check</li> <li>○ Input masks</li> </ul> </li> <li>• Create and use i.e.: <ul style="list-style-type: none"> <li>○ Input forms i.e. multi table entry, list box, check box, text field</li> <li>○ Controls (e.g. via use of macros (e.g. from switchboard/dashboard to navigate between aspects of the database))</li> </ul> </li> <li>• Design and create queries using i.e.: <ul style="list-style-type: none"> <li>○ Multiple tables</li> <li>○ Wildcards</li> <li>○ Parameters</li> <li>○ CrossTab</li> <li>○ Grouping information in query using SUM, MAX, MIN, etc</li> </ul> </li> <li>• Design and create reports i.e.: <ul style="list-style-type: none"> <li>○ Multiple tables</li> <li>○ Complex queries e.g. multiple criteria</li> </ul> </li> <li>• Applying appropriate security measures to i.e. <ul style="list-style-type: none"> <li>○ Tables</li> <li>○ Queries</li> <li>○ Forms</li> <li>○ Reports</li> <li>○ Database</li> </ul> </li> <li>• Export and link data to other applications/technologies (e.g. hyperlink a database to a presentation, meaning that the data within the presentation is automatically updated with any subsequent changes to the data)</li> </ul>	<p>Learners should be able to select the appropriate software, tools and techniques to allow them to develop an effective data handling solution.</p> <p>It is not necessary for all the tools within the teaching content to be used during the internal assessment. It is the appropriate use of the tools to create an effective data handling solution that is important.</p>

### 3.4.3 Communicate

Teaching content.	Delivery guidance including KS3 expected prior learning
<b>Learning Outcome 6: Understand the different methods of processing data and presenting information</b>	
<p>6.1 Learners must be taught:</p> <p>Selection and justification of the appropriate tools and techniques and formats to process data to meet the defined objectives in a given context i.e.</p> <ul style="list-style-type: none"> <li>• Tools i.e.               <ul style="list-style-type: none"> <li>○ Word processor</li> <li>○ Spreadsheet</li> <li>○ Databases</li> <li>○ Desktop Publishing (DTP)</li> <li>○ Presentation software</li> </ul> </li> <li>• Outputs/Formats i.e.               <ul style="list-style-type: none"> <li>○ Presentation (e.g. presentation to company board, presentation to customers)</li> <li>○ Report (e.g. formal business report)</li> <li>○ Graphs/Charts (e.g. pivot, line, bar, pie, dynamic)</li> <li>○ Tables (e.g. table of results)</li> <li>○ Integrated Documents (e.g. document featuring components from other documents)</li> <li>○ End User documentation (e.g. user guide, installation guide)</li> <li>○ Websites (e.g. internal use web sites, intranet sites, internet site)</li> <li>○ Mobile apps (e.g. fitness app, travel app)</li> </ul> </li> </ul>	<p><i>There is an expectation that learners should be familiar with software applications and some of the tools and techniques used within them to process and present data as part of their Key Stage 3 studies.</i></p> <p>At Key Stage 4, learners should be able to select the most appropriate tools and techniques to be used to process information and data for any given context. They should understand that different tools and techniques can be used to meet the defined objectives depending on the desired outcome.</p>
<p>6.2 Selection of the appropriate tools and techniques to present information to meet the defined objectives in a given context and justification of the use of the selected tool and format.</p> <p>The purpose and suitability of methods of presenting information and data i.e.</p> <ul style="list-style-type: none"> <li>• Needs of target audience</li> <li>• What information is being shared</li> <li>• How the information is being shared across distribution channels i.e.           <ul style="list-style-type: none"> <li>○ Email</li> <li>○ Mobile technologies (e.g. apps/ texts )</li> <li>○ Remote storage/cloud</li> <li>○ Voice over internet protocols,</li> <li>○ Websites               <ul style="list-style-type: none"> <li>▪ Blogs, Vlogs,</li> <li>▪ Social media</li> <li>▪ Podcasts</li> <li>▪ Galleries</li> </ul> </li> </ul> </li> <li>• Selection of presentation method</li> </ul>	<p>Learners should understand the purpose of differing methods of processing and presenting information and be able to apply this knowledge to given contexts.</p> <p>They should understand that differing methods have strengths and weaknesses and be able to use these to select methods, justifying their choice, for any given context.</p>

Teaching content.		Delivery guidance including KS3 expected prior learning
	The strengths and weaknesses of methods of presenting information.	
6.3	<p>The resources required for presenting information and data and the appropriateness of the use of these in context i.e.</p> <ul style="list-style-type: none"> <li>• Hardware requirements</li> <li>• Software requirements</li> <li>• Connectivity requirements</li> </ul>	<p><i>Learners should be aware of the hardware and software types from their Key Stage 3 study.</i></p> <p>Whilst selecting presentation method(s) learners should consider the hardware and/or software resources needed to complete the processing, along with any connectivity requirements.</p> <p>For example, if a resource is to be stored and shared on-line, then all users of the resource must have internet connectivity to enable them to access the resource.</p>
<p><b>Learning Outcome 7: To be able to select and present information in the development of the solution to meet an identified need</b></p>		
7.1	<p>Learners should be taught how to i.e.:</p> <ul style="list-style-type: none"> <li>• Select relevant data for a given purpose</li> <li>• Present information for a given purpose and audience</li> </ul>	<p><i>The following content is expected prior learning at Key Stage 3:</i></p> <p><i>Appropriate and consistent use of and when not to use:</i></p> <ul style="list-style-type: none"> <li>• <i>Fonts (Size, colour, emphasis, typeface)</i></li> <li>• <i>Bullets</i></li> <li>• <i>Alignment</i></li> <li>• <i>Page backgrounds (colour, image (pixelate))</i></li> <li>• <i>Page set up (margins, line spacing, indentation, text wrap, orientation, layers, positioning, columns)</i></li> <li>• <i>Slide transitions</i></li> <li>• <i>Spelling and grammar check</i></li> <li>• <i>Proof reading</i></li> <li>• <i>Word count</i></li> <li>• <i>Hyperlinks</i></li> <li>• <i>House style</i></li> </ul> <p>Learners should be able to select the appropriate software, tools and techniques to allow them to present the information accurately and appropriately to the intended</p>
7.2	<p>Learners should be taught how to present information using appropriate software tools and techniques including Word Processing/Desktop Publishing (DTP) i.e.</p> <ul style="list-style-type: none"> <li>• Convert table to text and text to table</li> <li>• Use referencing tools i.e. <ul style="list-style-type: none"> <li>○ Footnotes</li> <li>○ Endnotes</li> <li>○ Captions</li> </ul> </li> <li>• Create tables of contents and indexes</li> <li>• Advanced mail merge (linking from external data sources e.g. databases/spreadsheets)</li> <li>• Use of macros for automation of tasks</li> <li>• Link and embed to integrate data</li> <li>• Use of watermarks, sections, headers, and footers</li> <li>• Document review i.e. <ul style="list-style-type: none"> <li>○ Comments</li> <li>○ Tracking amendments</li> <li>○ Reading ability e.g. Fletsch Kincaid</li> </ul> </li> <li>• Apply appropriate security measures to documents</li> <li>• Save and export in appropriate formats</li> </ul>	

Teaching content.	Delivery guidance including KS3 expected prior learning
	<p>audience(s).</p> <p>It is not necessary for all the software and/or tools within the teaching content to be used during the internal assessment.</p>
<p>7.3 Learners should be taught presentation techniques i.e.</p> <ul style="list-style-type: none"> <li>• Enhancing text and objects i.e. <ul style="list-style-type: none"> <li>○ Text anchoring</li> <li>○ Advanced drawing tools i.e. <ul style="list-style-type: none"> <li>– Layering</li> <li>– Grouping</li> <li>– Flipping</li> <li>– Rotating</li> </ul> </li> <li>○ Scaling</li> </ul> </li> <li>• Managing slideshows i.e. <ul style="list-style-type: none"> <li>○ Sound</li> <li>○ Video</li> <li>○ Branching slideshows (e.g. running a slideshow from within a slideshow)</li> <li>○ Non - linear slideshows</li> </ul> </li> <li>• Presentation techniques i.e. <ul style="list-style-type: none"> <li>○ Effective use of speaker notes (e.g. visible to speaker but not to audience during a presentation)</li> </ul> </li> <li>• Customising i.e. <ul style="list-style-type: none"> <li>○ Master pages</li> <li>○ Appropriate change of colours and backgrounds</li> <li>○ Modifying templates</li> </ul> </li> <li>• Integrating with other applications i.e. <ul style="list-style-type: none"> <li>○ Text to presentation</li> <li>○ Presentation to text</li> <li>○ Embedding of spreadsheet charts and graphs</li> <li>○ Editing of embedded objects</li> <li>○ Linking objects</li> <li>○ Launching applications from within a presentation</li> <li>○ Launching websites</li> </ul> </li> <li>• Applying appropriate security measures to documents</li> <li>• Saving and exporting in appropriate formats</li> </ul> <p>Learners should be taught how to present information using Website(s)/Mobile techniques, i.e.</p> <ul style="list-style-type: none"> <li>• Implement responsive web design (e.g. the practice of building a website suitable to work on every device and every screen size, no matter how large or small, mobile or desktop.)</li> <li>• HTML to create and layout pages</li> </ul>	<p><i>The following content is expected prior learning at Key Stage 3:</i></p> <p><i>Appropriate and consistent use of and when not to use:</i></p> <ul style="list-style-type: none"> <li>• <i>Borders</i></li> <li>• <i>Fills</i></li> <li>• <i>Shadows</i></li> <li>• <i>Animation and transition effects</i></li> <li>• <i>Limited amount of text on each slide</i></li> <li>• <i>Aesthetics</i></li> <li>• <i>Printing slides in relevant formats e.g. for delegates for presenter</i></li> </ul> <p>It is not necessary for all the software and/or tools within the teaching content to be used during the internal assessment.</p> <p>Access to appropriate software to create the web/mobile solution does not require the use of specialist applications to develop the solutions.</p>

Teaching content.	Delivery guidance including KS3 expected prior learning
<ul style="list-style-type: none"><li>• Use of Cascading style sheets (CSS) to enhance look of site and pages</li><li>• Applying appropriate security measures</li><li>• Consideration of aesthetic and information design</li></ul>	

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### 3.4.4 Iterative review and final review

Teaching content.	Delivery guidance including KS3 expected prior learning
<b>Learning Outcome 8: To be able to iteratively review the development of the solution</b>	
<p>8.1 Learners should be taught how to carry out and document an iterative review i.e.</p> <ul style="list-style-type: none"> <li>• Phase review – learners need to show that they have reviewed the following aspects at each phase of the project life cycle, considering:               <ul style="list-style-type: none"> <li>○ If on track/on schedule</li> <li>○ Any issue(s) arising e.g. technical, security, legal, usability</li> <li>○ Any questionnaire/survey(s) from user/audience</li> <li>○ Resolutions to issues</li> <li>○ Adaptions to original plan</li> </ul> </li> <li>• Final review - learners need to show that they have reviewed the following i.e.               <ul style="list-style-type: none"> <li>○ Measure success against criteria/objectives</li> <li>○ Review deviations from original plans</li> <li>○ Project delivery on schedule</li> <li>○ Effect of processes and resources on delivering solution e.g. software selected, tools and techniques used, compatibility between software and systems.</li> <li>○ Maintainability e.g. further development of system in future, use of emerging technologies, adapting to a changed environment</li> </ul> </li> </ul>	<p>Learners should be able to carry out a detailed review of their project during/after:</p> <ul style="list-style-type: none"> <li>• Development of the data handling aspect of the project</li> <li>• Development of the communication aspect of the project</li> <li>• After the completion of the development of the project commenting upon the process undertaken and what future developments could take place.</li> </ul> <p>Types of questions that could be asked in an iterative review/final review:</p> <ul style="list-style-type: none"> <li>• What do you think made this stage of the life cycle/solution a success?</li> <li>• What do you think made this stage of the life cycle/solution not a success?</li> </ul> <p>When thinking about what went well and what didn't consider the following:</p> <ul style="list-style-type: none"> <li>• Did you do what you planned to do?               <ul style="list-style-type: none"> <li>○ Think back to the choices you made for each stage of the life cycle, did you make the right choices?                   <ul style="list-style-type: none"> <li>▪ If not, why not?</li> <li>▪ What would you do differently? And why do you think this is a good idea?</li> </ul> </li> </ul> </li> <li>• Did you deviate from the plan?               <ul style="list-style-type: none"> <li>○ If you did deviate:                   <ul style="list-style-type: none"> <li>▪ What was not working?</li> <li>▪ Why do you think that was?</li> <li>▪ What did you change?</li> </ul> </li> </ul> </li> </ul>

Teaching content.	Delivery guidance including KS3 expected prior learning
	<ul style="list-style-type: none"> <li>▪ Why did you think this change was better than the original choice?</li> <li>• How did you resolve any issues and constraints? Why did you take that approach? Why do you think your resolution and adaptations were a good idea?</li> <li>• If you were repeating this stage/project would you do the same again? And why do you think that?</li> <li>• Did you consider everything you needed to consider in the planning phase?</li> </ul> <p>The iterative review will give the learner the opportunity to share the thinking behind their choices but even then they may not make reference to every area of the teaching content</p>

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## 3.5 Marking criteria for R013

General Instruction = 0 marks must be given where there is no evidence or no evidence worthy of credit.

The assessment tasks are marked by teachers according to the OCR marking criteria using a 'best fit' approach. Full details are given in section 6'

Use of IT Tools and Techniques					
1.1	To initiate/plan	10 marks	1 to 3 marks	4 to 6 marks	7 to 10 marks
			<b>Limited</b> use of tools and features results in potential of technology being under-utilised for the intended purpose. May use only one application but where more than one is being used they are used in isolation.	<b>Adequate</b> use of tools and features results in potential of technology being utilised for the intended purpose. There are aspects of integration across two or more applications that are used.	<b>Effective</b> use of tools and features results in potential of technology being fully utilised and clearly aligned to the intended purpose. Applications used are fully integrated.
1.2	To import and manipulate data	10 marks	1 to 3 marks	4 to 6 marks	7 to 10 marks
			<b>Limited</b> use of tools and features results in potential of technology being under-utilised for the intended purpose. May use only one application but where more than one is being used they are used in isolation.	<b>Adequate</b> use of tools and features results in potential of technology being utilised for the intended purpose. There are aspects of integration across two or more applications that are used.	<b>Effective</b> use of tools and features results in potential of technology being fully utilised and clearly aligned to the intended purpose. Applications used are fully integrated.

1.3	To select and present integrated information	10 marks	1 to 3 marks	4 to 6 marks	7 to 10 marks
			<b>Limited</b> use of tools and features results in potential of technology being under-utilised for the intended purpose. May use only one application but where more than one is being used they are used in isolation.	<b>Adequate</b> use of tools and features results in potential of technology being utilised for the intended purpose. There are aspects of integration across two or more applications that are used.	<b>Effective</b> use of tools and features results in potential of technology being fully utilised and clearly aligned to the intended purpose. Applications used are fully integrated.
<b>Project Life Cycle Processes and Methods</b>					
2.1	Initiation/ Planning	13 marks	1 to 4 marks	5 to 8 marks	9 to 13 marks
			Objectives and requirements are stated and there is a list of tasks. Consideration of dependencies can be assumed but there is no evidence of it. Success criteria are <b>described</b> .	Objectives and requirements are stated. There are logical dependencies shown for <b>some</b> tasks and sub-tasks although it is not presented as a critical-path. There is an <b>explanation</b> behind the choice of success criteria.	Objectives and requirements are stated. A critical path is defined, with logical dependencies shown between key milestones and sub-tasks. There is a <b>justification</b> of the success criteria chosen.
			Constraints, risks, resources and milestones have been <b>identified</b> although some obvious ones may be missing and no links are made between them.	Links between constraints, risks and resources have been identified although <b>some</b> links are missed or not made clear. Ways to mitigate are <b>stated</b> but the consequences of actions are not evidenced.	Links between constraints, risks and resources are clearly defined and contingencies identified. Mitigation for the plan is <b>explained</b> .
			Although there may be obvious gaps in planning activities, the plan is feasible.		

		1 to 4 marks			5 to 8 marks			9 to 13 marks			
<b>2.2</b>	Importing and manipulating data (Execution 1)	13 marks	The solution allows for data to be imported and manipulated. There will be inefficiencies and inaccuracies that will impact on the quality of the data and the objectives of the solution.			The solution allows for data to be imported and manipulated so that most of the requirements of the project can be met. There may be some inefficiencies but they will not impact on meeting the requirements.			The solution allows for data to be imported and manipulated efficiently and effectively so that all requirements of the project can be met.		
			The solution is open to security and legal risks.			The security and legal risks identified in the planning phase have been carried forward into the solution and evidenced although only one or two tools and techniques are used to protect the data from malicious intent or unauthorised access. Some opportunities for safe, secure and responsible practices have been missed.			The security and legal risks identified in the planning phase have been carried forward into the solution and evidenced by a range of tools and techniques used to protect the data from malicious intent or unauthorised access. This takes into account both how the data will be processed and how the information will be presented.		
<b>2.3</b>	Selecting and presenting information (Execution 2)	13 marks	The data created has only been used in a minimal way to support the information being presented.			The data is suitably used to support the information being presented which addresses some of the project requirements.			The data is suitably used to support the information being presented which addresses all of the project requirements.		
			Nonetheless information has been communicated to address some of the			Different methods may have been selected for different audiences but what is used is			They have utilised suitable opportunities to integrate processed data with communication		

		<p>requirements of the project. How the data has been structured may affect the clarity of the information communicated. The same method and the same distribution channel have been used to communicate information to all audiences. There will be no integration of the data with the method.</p>	<p>passable for the type of information and its audience. There may be some integration between processed data and the communication method(s). The quality and quantity of information provided meets the requirements of each audience, but there may be some instances of misinformation. Only one distribution channel may have been selected to communicate the information to all audiences.</p> <p>Security and legal actions taken are aligned with at least one distribution channel to minimise risks from cyber-security attacks. Some of those actions may not be effective.</p>	<p>methods and each distribution channel to communicate the information to each intended audience. The quality, quantity and accessibility of the information provided clearly meets the requirements of each audience.</p> <p>Security and legal actions taken are directly aligned with the selected distribution channels to minimise risks from cyber-security attacks.</p>
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### Iterative Review

			1 to 3 marks	4 to 7 marks	8 to 11 marks
<b>3.1</b>	Evaluation	11 marks	<p>There may be an attempt to carry out an iterative review at the end of one or more phases which states what went well and/or what did not go well, but without reasons for why that was.</p>	<p>Iterative reviews have been carried out for one or more phases of the project life cycle, showing consideration of both positive and negative aspects to inform the immediate next stage.</p> <p>The review may lack detail about what went well and what did not with reasons for why that was. Resolutions and adaptations are <b>described</b> and some are <b>explained</b> although they are not justified.</p>	<p>Iterative reviews have been carried out for all phases of the project life cycle, showing consideration of both positive and negative aspects of the current phase and any phases that preceded it to inform direction and decisions for all phases to follow.</p> <p>Resolutions and adaptations are <b>explained</b> and some are <b>justified</b>.</p>
			<p>Carries out a final review at the end of the project that states what went well and/or what did not go well, there may be no recognition of what changes were made, if any, during the project.</p>	<p>Carries out a final review against their success criteria, identifying if the objectives were met.</p> <p>Evidence of a reflection on the planning stage outputs, project objectives and success criteria. Identifies any gaps or issues that emerged in a later phase and/or those that they would like to consider if they were repeating the project (lessons learnt).</p>	<p>Carries out a final review that measures the success of the project against their success criteria.</p> <p>Review includes an analysis of the original planning documentation compared to the final product and the effects of constraints on the project such as processes and resources are evaluated and lessons learnt recorded.</p>

## 3.6 Glossary of terms used in R012 and R013

<b>Adequate</b>	Satisfactory or acceptable in quality or quantity
<b>Analyse</b>	Break down in order to bring out the essential elements or structure. To identify parts and relationships, and to interpret information to reach conclusions.
<b>Annotate</b>	Add brief notes to a diagram or graph.
<b>Calculate</b>	Obtain a numerical answer showing the relevant stages in the working.
<b>Compare</b>	Give an account of the similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.
<b>Convert</b>	Change the form, character, or function of something.
<b>Describe</b>	Give a detailed account or picture of a situation, event, pattern or process
<b>Discuss</b>	Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence.
<b>Effective</b>	Applies skills appropriately to a task and achieves the desired outcome; Successful in producing a desired or intended result
<b>Efficient</b>	Performing or functioning in the best possible manner with the least waste of time and effort; having and using requisite knowledge, skill and effort
<p>Note on effective versus efficient: both express approval of the way in which someone or something works but their meanings are different. Effective describes something which successfully produces an intended result, without reference to morality, economy or effort, or efficient use of resources. Efficient applies to someone or something able to produce results with the minimum expense or effort, as a result of good organisation or good design and making the best use of available resources</p>	
<b>Evaluate</b>	Assess the implications and limitations; to make judgements about the ideas, works, solutions or methods in relation to selected criteria.
<b>Explain</b>	Give a detailed account including reasons or causes.
<b>Give</b>	Present information which determines the importance of an event or issue. Quite often used to show causation.
<b>How</b>	In what way or manner; by what means.
<b>Identify</b>	Provide an answer from a number of possibilities. Recognise and state briefly a distinguishing factor or feature.
<b>Justify</b>	Give valid reasons or evidence to support an answer or conclusion.
<b>Label</b>	Add title, labels or brief explanation(s) to a diagram or graph.

<b>Limited</b>	The work produced is small in range or scope and includes only a part of the information required; it evidences partial, rather than full, understanding
<b>List</b>	Give a sequence of brief answers with no explanation.
<b>Measures</b>	Assess the importance, effect or value of something.
<b>Most</b>	Greatest in amount; the majority of; nearly all of; at least 75% of the content which is expected has been included
<b>Order</b>	Put the responses into a logical sequence.
<b>Outline</b>	Give a brief account or summary.
<b>Passable</b>	Just good enough for its purpose
<b>Range</b>	The evidence presented is sufficiently varied to give confidence that the knowledge and principles are understood in application as well as in fact
<b>Some</b>	About 50% of the content which would have been expected is included
<b>State</b>	Give a specific name, value or other brief answer without explanation or calculation.
<b>What</b>	Asking for information specifying something.
<b>Which</b>	Selecting information from a choice of possibilities.
<b>Why</b>	For what reason, cause or purpose has a selection been made.

# 4 Assessment and grading

## 4.1 Assessment structure

Entry code	Qualification title	GLH	Reference
J808	OCR Level 1/2 Cambridge National Certificate in Information Technologies	120	603/1311/0
<p>There are two units of assessment.</p> <p>To claim the Level 1/2 Cambridge National Certificate Information Technologies qualification, learners must complete both units of assessment.</p> <p>Performance in both assessments will be underpinned by acquiring the knowledge, understanding and skills specified for the qualification through learning by doing. We encourage holistic delivery and require the synoptic application of skills, knowledge and understanding.</p>			
<p>Entry code R012 - Understanding tools, techniques, methods and processes for technological solutions</p> <ul style="list-style-type: none"> <li>1 hour 45 mins written examination</li> <li>80 marks (120 UMS)</li> <li>OCR set and marked</li> <li>There will be two exam series each year, except in the first year of teaching when there will only be one series, date to be confirmed.</li> </ul>		<p>This will directly assess the learning outcomes titled as 'Understand':</p> <p><i>LO1: Understand the tools and techniques that can be used to initiate and plan solutions</i></p> <p><i>LO3: Understand how data and information can be collected, stored and used</i></p> <p><i>LO4: Understand the factors to be considered when collecting, processing and storing data and information</i></p> <p><i>LO6: Understand the different methods of processing data and presenting information.</i></p>	
<p>Entry code R013 - Developing technological solutions</p> <ul style="list-style-type: none"> <li>80 marks (120 UMS)</li> <li>An assignment set by OCR, marked by teachers and moderated by OCR</li> <li>The assignment will include a context and set of tasks</li> <li>A new assignment will be released each year and published on the OCR website</li> <li>The assignment will be available in three consecutive series and then withdrawn.</li> </ul>		<p>This will directly assess the learning outcomes titled as 'Be able to':</p> <p><i>LO2: To be able to initiate and plan a solution to meet an identified need</i></p> <p><i>LO5: To be able to import and manipulate data to develop a solution to meet an identified need</i></p> <p><i>LO7: To be able to select and present information in the development of the solution to meet an identified need</i></p> <p><i>LO8: To be able to iteratively review the development of the solution</i></p>	



## 4.2 Grading and awarding grades

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All results are awarded on the following scale:

- Distinction\* at Level 2 (\*2)
- Distinction at Level 2 (D2)
- Merit at Level 2 (M2)
- Pass at Level 2 (P2)
- Distinction at Level 1 (D1)
- Merit at Level 1 (M1)
- Pass at Level 1 (P1).

The shortened format of the grade will be displayed on Interchange and some administrative documents provided by OCR. However, the full format of the grade will appear on the certificates issued to learners.

The boundaries for Distinction at Level 2, Pass at Level 2, and Pass at Level 1 are set judgementsally. Other grade boundaries are set arithmetically.

The Merit (Level 2) is set at half the distance between the Pass (Level 2) grade and the Distinction (Level 2) grade. Where the gap does not divide equally, the Merit (Level 2) boundary is set at the lower mark (e.g. 45.5 would be rounded down to 45).

The Distinction\* (Level 2) grade is normally located as far above Distinction (Level 2) as Merit (Level 2) is below Distinction (Level 2).

To set the Distinction (Level 1) and Merit (Level 1) boundaries, the gap between the Pass (Level 1) grade and the Pass (Level 2) grade is divided by 3, and the boundaries set equidistantly. Where this division leaves a remainder of 1, this extra mark will be added to the Distinction (Level 1)-Pass (Level 2) interval, i.e. the Distinction (Level 1) boundary will be lowered by 1 mark. Where this division leaves a remainder of 2, the extra marks will be added to the Distinction (Level 1)-Pass (Level 2) interval, and the Merit (Level 1)-Distinction (Level 1) interval, i.e. the Distinction (Level 1) boundary will be lowered by 1 mark, and the Merit (Level 1) boundary will be lowered by 1 mark.

For example, if Pass (Level 2) is set judgementsally at 59, and Pass (Level 1) is set judgementsally at 30, then Distinction (Level 1) is set at 49, and Merit (Level 1) is set at 39.

Grades are indicated on qualification certificates. However, results for learners who fail to achieve the minimum grade (Pass at Level 1) will be recorded as *unclassified* (U or u) and this is **not** certificated.

The assessment of this qualification is unitised. Learners can take assessment units across several different series and they can also resit assessment units. Please refer to section 9.6 *Resits*. When working out learners' overall grades OCR needs to be able to compare performance on the same assessment unit in different series when different grade boundaries may have been set, and between different assessment units. OCR uses a Uniform Mark Scale (UMS) to enable this to be done.

A learner's uniform mark for each assessment unit is calculated from the learner's raw mark on that assessment. The raw mark boundary marks are converted to the equivalent uniform mark boundary. Marks between grade boundaries are converted on a pro rata basis.

When assessment unit results are issued, the learner's unit grade and uniform mark are given. The uniform mark is shown out of the maximum uniform mark for the assessment (e.g. 40/60).

The uniform mark boundaries for each of the assessments are shown below:

Unit GLH	Max Unit Uniform Mark	Unit Grade							U
		Distinction* at L2	Distinction at L2	Merit at L2	Pass at L2	Distinction at L1	Merit at L1	Pass at L1	
60	120	108	96	84	72	60	48	36	

The learner's uniform mark for assessment unit R012 will be combined with the uniform mark for the internally assessed R013 to give a total uniform mark for the qualification. The learner's overall grade will be determined by the total uniform mark. The following table shows the minimum total mark for each overall grade:

Qualification	Max Uniform Mark	Qualification Grade							U
		Distinction* at L2	Distinction at L2	Merit at L2	Pass at L2	Distinction at L1	Merit at L1	Pass at L1	
Certificate	240	216	192	168	144	120	96	72	0

### 4.3 Performance descriptors

The performance descriptors indicate the level of attainment associated with Distinction at Level 2, Pass at Level 2 and Pass at Level 1. They are for use at awarding meetings. They give a general indication of the levels of attainment likely to be shown by a representative learner performing at these boundaries.

#### Performance Descriptor – Distinction at Level 2

Learners will be able to:

- demonstrate a **good** understanding of the project life-cycle including a **clear** understanding of the interaction and iteration between **all** of the phases
- demonstrate a **well-considered** understanding of how technology can be used to support the project life-cycle including the strengths **and weaknesses** of using information technologies within each phase
- **effectively** plan, manipulate, process and communicate data and information through the **well-considered** selection and use of a range of ICT tools and techniques to deliver **effective integrated** technology-based solutions
- **effectively** and **appropriately** mitigate risks when manipulating and processing data and communicating information. This will also include a **detailed** knowledge of how to mitigate risks when collecting data.
- **consistently** apply iterative review techniques throughout the different stages of the project life-cycle. There will also be an **effective** final review against the original plan. Both the iterative review and final review will contain **well-reasoned** judgements and **substantiated** conclusions.

## Performance Descriptor – Pass at Level 2

Learners will be able to:

- demonstrate a **reasonable** understanding of the project life-cycle including a **reasonable** understanding of the interaction and iteration between **all** of the phases
- demonstrate an **adequate** understanding of how technology can be used to support the project life-cycle including the strengths **and/or** weaknesses of using information technologies within each phase
- **adequately** plan, manipulate, process and communicate data and information through the selection and use of a range of ICT tools and techniques, to deliver **adequate** technology-based solutions which **for the most part** are integrated.
- mitigate risks when manipulating and processing data and communicating information although **some opportunities** for safe, secure, and responsible practices may be missed. This will also include a **reasonable** knowledge of how to mitigate risks when collecting data.
- apply iterative review techniques **through most of the** stages of the project life-cycle although approach at times may **lack detail**. There will also be a **reasonable** final review against the original plan. Both the iterative review and final review will contain **adequate** judgements and conclusions, **some** of which are substantiated.

## Performance Descriptor – Pass at Level 1

Learners will be able to:

- begin to demonstrate a **basic** understanding of the project life-cycle including a basic **awareness** of the interaction and iteration between **some** of the phases
- demonstrate a **basic** understanding of how technology can be used to support the project life-cycle including the strength(s) **or** weakness(es) of using information technologies within **some** of the phases
- plan, manipulate, process and communicate data and information in a **limited** way through the **basic** selection and use of a range of ICT tools and techniques to deliver **simplistic** technology-based solutions
- mitigate risks when manipulating and processing data and communicating information in a **limited** way. This will also include a **basic** knowledge of how to mitigate risks when collecting data.
- apply iterative review techniques through **some** of the stages of the project life-cycle **and/or** provide a **limited** final review against the original plan. The iterative and/or final review will result in **limited** judgements and **some** conclusions but these may **lack** an explanation and may at times **contradict** the approach taken

# 5 Preparing for qualification delivery and assessment

## 5.1 Centre and teacher/assessor responsibilities

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For this qualification we assume the teacher is the assessor.

Before you plan to seek approval from us to offer this qualification you must be confident your centre can fulfil all the responsibilities described below.

The quality of the delivery of teaching and the integrity of assessments and quality assurance is paramount. Systems have to be in place so that assessments are fair, valid, reliable, authentic and sufficient. One of the key factors behind valid, fair and reliable assessment is the expertise of those doing the assessment and internal quality assurance.

With this in mind here's a summary of the responsibilities that your centre and teachers must be able to fulfil. It is the responsibility of the Head of Centre to ensure our requirements are met:

- there are enough trained or qualified people to teach and assess the expected number of learners you have in your cohorts
- teaching staff have the relevant level of subject knowledge and skills to deliver the this qualification
- teaching staff will fully cover the knowledge, understanding and skills requirements in teaching and learning activities
- necessary resources are available for teaching staff and learners during teaching and assessment activities, to give learners every opportunity to meet the requirements of the qualification and reach the highest grade possible
- there's a system of standardisation in place so that all assessment decisions for teacher-marked assignments are consistent, fair, valid and reliable. (see 'internal standardisation' in section 6.4)
- there's enough time for effective teaching and learning, assessment and internal standardisation
- processes are in place to make sure that learners' work is authentic and confirmed as being authentic (see 'Ways to authenticate work' in section 6)
- centres must use the OCR-set assignment for the assessment unit R013. These are released annually and centres must check the OCR website to see which OCR-set-assignments are available (see section 6).
- materials we set and provide for teacher-marked assignments are not used for practice (see section 6)
- teachers refer to assessment guidance when marking the OCR set-assignment
- marks submitted to us are correctly recorded in all centre and OCR records and forms
- exams must be conducted so they comply with the JCQ *Instructions for Conducting Examinations*
- a declaration is made at the point you're submitting any work to us for assessment that confirms:

- all assessment is conducted according to the specified regulations identified in the Administration area, [www.ocr.org.uk/administration/](http://www.ocr.org.uk/administration/)
- learners' work is authentic
- marks have been transcribed accurately
- centre records and learners' work is kept according to the requirements below:
  - learners' work must be kept until after their qualifications have been awarded and any appeals processed. We will not consider any appeals if the centre does not keep the work
  - internal standardisation and assessment records must be kept securely for a minimum of three years after the date we've issued a certificate for a qualification.
- learners understand what they need to do to get the highest marks possible.
- learners' understand what it means when we say work must be authentic and they (and you) have to follow any requirements we set out to make sure their work is their own.
- learners know they must not reference another individual's personal details in any evidence produced for summative assessment in accordance with the Data Protection Act. It's the learner's responsibility to make sure evidence that includes another individual's personal details is anonymised
- the Head of Centre must report all cases of suspected malpractice involving centre staff or learners.(see Reporting suspected malpractice in section 7).

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# 6 Requirements and guidance for delivering and marking the assignment (R013)

## 6.1 OCR Set assignments

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OCR sets the assignments for the practical assignment. The assignments will be available free of charge from the OCR website. The practical assignment is set by OCR, taken under controlled conditions, marked by the teacher and moderated by OCR

OCR will release new OCR-set assignments each year. Each assignment will be available for three consecutive series and then withdrawn. It is the centre's responsibility to check the OCR website to see which OCR-set assignments can be used for summative assessment.

The rest of this section deals with how we expect you to manage the delivery and marking of the assignment for assessment unit R013, Developing technological solutions, so that assessment is valid and reliable. Here is a summary of what we require you to do:

- you use only use our assignments for summative assessment.
- you cannot change any aspect of the OCR-set assignments (scenarios or tasks)
- you cannot use the OCR-set assignments as practice materials
- you can start the summative assessment at any point when you know you have covered the knowledge, understanding and skills with your learners and they are ready for assessment
- you will allow learners a reasonable period of time to complete the assignment and be fair and consistent to all learners. The time you allow is to be in line with the estimated time we think it should take and stated in the section "Information for Teachers" in an OCR-set assignment. Within that time learners are able to work on the tasks any time until the date the centre collects the work for internal assessment.
- you must monitor their progress to make sure work is capable of being assessed against the marking criteria, on track for being completed in good time and is the learner's own work:
  - learners must be under direct supervision when doing work for the assignment
  - learners cannot take any work for the assignment home with them
  - accounts associated with the practical assignment must be locked between sessions to ensure that learners cannot access them outside of the supervised conditions
  - you must not provide templates of model answers for the OCR-set assignment
  - you must not produce templates or model answers for the OCR-set assignment and publish them online.
  - you must not practise the OCR-set assignment tasks with the learners
  - you must not create practise assignments which are similar in nature to those set by OCR
  - you must not give detailed advice and suggestions to individuals or the class as a whole as to how the work may be improved in order to meet the assessment criteria.
  - learners must produce their work independently (see sections 6.1 and 6.2 on Feedback and Ways to authenticate work)

- You have to make ensure learners are clear about the tasks they are to undertake and the criteria which they are expected to meet. You can:
  - explain the task
  - provide a copy of the mark scheme to candidates.
- learners can take the initiative to improve any element of their work as they work through the assignment
- learners can repeat any element of the assignment and rework their original evidence but any feedback given to learners on the original (marked) evidence must be recorded and available to the moderator (see section 6.3 on resubmitting work)
- you must not encourage or be persuaded to accept multiple resubmissions of work where small changes have been made in response to on-going feedback
- neither centre staff nor learners can add, amend or remove any work after it has been submitted for moderation. This will constitute malpractice.
- learners must know they cannot reference another individual's personal details in any evidence produced for summative assessment and know how to anonymise evidence.
- the marking criteria must be used to mark the learners' work.

### 6.1.1 Ways to authenticate work

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Teachers must be confident that the work they mark is the learner's own. Every learner must produce their own work independently. The teacher must exercise sufficient supervision, or introduce sufficient checks, to be in a position to judge the authenticity of the learner's work.

Wherever possible, the teacher should discuss work-in-progress with learners. This will not only ensure that work is underway in a planned and timely manner, but will also provide opportunities for teachers to check authenticity of the work.

The teacher must:

- make sure learners and other teachers understand what constitutes plagiarism and not accept plagiarised work as evidence
- use supervision and questioning as appropriate to confirm authenticity
- make sure learners and teachers complete declaration statements.

### 6.1.2 Plagiarism

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When producing written final pieces of work for the practical assignment learners must use their own words to show they have genuinely applied their knowledge and understanding. When learners use their own words it reduces the possibility of learners' work being identified as plagiarised. Plagiarism is the submission of someone else's work as your own and/or failure to acknowledge a source correctly. Plagiarism makes up a large percentage of cases of suspected malpractice reported to us by moderators. Teachers must make sure they do not accept plagiarised work as evidence.

In line with the policy and procedures of JCQ on suspected malpractice, the penalties applied for plagiarism would usually result in the work not being allowed.

Plagiarism often occurs innocently when learners do not know that they must reference or acknowledge their sources, or aren't sure how to do so. It's important to make sure your learners understand:

- the meaning of plagiarism and what penalties may be applied

- that they can refer to research, quotations or evidence produced by somebody else but they must list and reference their sources and clearly mark quotations.
- quoting someone else's work, even when it's properly sourced and referenced, isn't an indication of understanding. The learner has to 'do' something with that information to show they understand it. For example, if a learner has to analyse data from an experiment, quoting data doesn't show that they understand what it means. The learner has to interpret the data and, by relating it to their assignment, say what they think it means. It has to be clear in the work how the learner is using the material they have referenced **to inform their** thoughts, ideas or conclusions.

We have a guide to referencing on our website. See *The OCR Guide to Referencing*: <http://www.ocr.org.uk/i-want-to/skills-guides/>.

We also give information for learners on plagiarism in the *Information for Learners* section of the OCR-set assignments.

### 6.1.3 Supervision

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Internally assessed work should be completed in the course of normal curriculum time, and supervised and marked by the teacher. It is unlikely that the OCR-set assignment will ever require or allow work to be done outside the supervision of the teacher. If it is permitted it will be stated in the assignment. As with all internally assessed work, the teacher must be satisfied that the work submitted for assessment is the learner's own. If work is undertaken outside the centre you must use enough checks so you're confident the learner's work is authentic. For example, you can use questioning to confirm the depth and breadth of their understanding of the topic they've covered in a specific piece of work.

### 6.1.4 Use of questioning

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Asking questions of a learner will help you confirm the work is their own. Questions might cover how they've done the work, what processes they went through to produce it and how they've related that to the assignment.

### 6.1.5 Learner and centre declarations

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Both candidates and teachers must declare that the work is the candidate's own:

- **each candidate** must sign a declaration before submitting their work to their teacher. A candidate authentication statement that can be used is available to download from the OCR website. These statements should be retained within the centre until all enquiries about results, malpractice and appeals issues have been resolved. **A mark of zero must be recorded if a candidate cannot confirm the authenticity of their work.**
- **teachers** are required to declare that the work submitted for internal assessment is the candidate's own work by sending the moderator a centre authentication form (CCS160) for each unit at the same time as the marks. If a centre fails to provide evidence of authentication, we will set the mark for that candidate(s) to Pending (Q) for that component until authentication can be provided.

### 6.1.6 Group working

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We do not assess the skills associated with group work in this qualification and the OCR-set assignment will not require it. If it is necessary to use group work to make the delivery of the assignment more manageable then you must make sure that all practical tasks and evidence



submitted for assessment that shows the learner has met the marking criteria is entirely the individual's own work.

## 6.2 Feedback to learners

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Teachers can discuss work-in-progress towards summative assessment with learners to make sure it's being done in a planned and timely manner. It also provides an opportunity to check the authenticity of the work. Teachers must intervene if there's a health and safety risk.

Generic guidance to the whole class is also allowed. This could include reminding learners to check they have provided evidence to cover every aspect of the task. Individual learners can be prompted to double check for gaps in evidence.

Teachers can give general feedback and support if one or more learners are struggling to get started on an aspect of the assignment or following a break between sessions working on the assignment. For example if a learner is seeking more guidance that suggests they are not able to apply knowledge, skills and understanding to complete their evidence teachers can remind them of what they have been taught.

Whatever the scenario is feedback must not provide specific advice and guidance that would be construed as coaching. This would compromise the learner's ability to independently perform the task(s) they are doing and constitutes malpractice. OCR moderators use a number of measures to assure themselves the work is the learner's own.

Once work has been marked feedback must be provided to learners on the work they submitted for assessment.

Feedback should:

- be supportive, encouraging and positive
- inform the learner of what has been noticed, not what the teacher thinks (for example if you have observed the learner completing a task you can describe what happened, what was produced and what was demonstrated)
- be recorded on the learner's original work submitted for marking but can be recorded in a separate document. Whichever method is used, evidence of feedback must be available to the moderator.

Feedback can:

- identify that the learner hasn't met the command verb. For example, 'This is only a description, not an evaluation'
- identify what area of work could be improved but not detail how to improve it. Learners can be reminded about what they were taught but not how to apply it to improve the work.

Feedback **must not**:

- be so detailed that it provides a step-by-step guide on what to do to complete or improve work
- coach the learner on how to achieve or complete the task
- provide model answers or detail specifically what amendments should be made
- provide detail on where to find information/evidence.

In other words, feedback must enable the learner to take the initiative in making amendments. It must not tell or direct the learner in what to do to complete or improve their work so that they do not need to think how to apply their learning, and teachers must not do the work for them.

## 6.3 Resubmitting work for (summative) assessment

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If you feel a learner has not performed at their best during the assessment, the learner can, at the centre's discretion, improve their work and resubmit it to the teacher for assessment. You must be sure it is in the learner's interests to re-attempt the assessment.

A realistic date should be set for the resubmission of work having considered the purpose of the assignment and what the learner intends to improve. You **must** record the reasons why a learner has been allowed to resubmit in the centre's assessment decision records. You **must** also follow our guidelines on giving feedback and record the feedback given to the learner on the original work. We monitor the assessment decisions you make.

You must not encourage multiple resubmissions of work. Resubmission prior to submitting a final mark to us is intended to allow the learner to reflect on feedback and improve, but not to be an iterative process where they make small modifications through on-going feedback to eventually achieve the desired level.

### 6.3.1 General guidance on evidence

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The learners' evidence should be in an appropriate format to demonstrate their skills, application of knowledge and understanding as specified in the marking criteria for assessment unit R013.

You should discuss with learners what the most suitable sources of evidence are. It isn't the quantity of the evidence they've produced that's important - it's the quality and breadth, that they've produced it themselves, and that it meets the marking criteria.

Learners should make sure their work is clearly presented, referenced and ordered to help in the assessment.

### 6.3.2 Using questioning as evidence

---

Questioning is often used to:

- check if a learner understands the work they have undertaken
- collect information on the type and purpose of the processes a learner has gone through
- test a learner's understanding of work which has been completed outside of the classroom.

If questioning is to be used as evidence towards achievement of specific learning outcomes, it is important that you record enough information about what they asked and how the learner replied, to allow the assessment decision to be moderated.

### 6.3.3 Anonymising evidence

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Learners must comply with the Data Protection Act when they are producing work for assessment. They must not reference another individual's personal details in any evidence produced for summative assessment. It's the learner's responsibility to make sure evidence that includes another individual's personal details is anonymised. You are allowed to point out to them if they haven't done it and to tell them what to do to anonymise the evidence.

## 6.4 Internal standardisation

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You must carry out internal standardisation to make sure all teachers are marking consistently and in line with the marking criteria.

We have a guide on how internal standardisation may be approached on our Cambridge Nationals webpages.

The purpose of internal standardisation is to monitor standards and to ensure consistent and reliable assessment decisions across all staff, ensuring that all assessment requirements of the qualification are met.

If you're the only teacher in your centre for this qualification, then it's still advisable to make sure your assessment decisions are internally standardised by someone else in your centre, ideally someone who has experience of the nature of this qualification (e.g. is delivering a similar qualification in another subject) or relevant subject knowledge and asking them to review a sample of the marking.

The person responsible for internal standardisation should read and apply the guidance we give in our document Internal Standardisation Generic Guidelines available on the webpages for this qualification.

## 6.5 Marking the practical assignment

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Teachers must use the marking criteria to mark the learners' work. These specify the levels of skills, knowledge and understanding that the learner is required to demonstrate.

We provide a glossary of terms in section 3.6 to help with the marking of learners' work. Our moderators use the glossary to help make their judgements.

The primary evidence will be the outcomes of the assignment and information will be given in the OCR-set assignment on what evidence is to be produced.

The mark scheme includes guidance on applying a mark of zero.

## 6.5.1 Use of a 'best fit' approach to marking criteria

The assessment tasks are marked by teachers according to the OCR marking criteria using a 'best fit' approach. For each of the marking criteria, teachers select the band descriptor provided in the marking grid that most closely describes the quality of the work being marked.

The marks in the marking grid are allocated as follows:

<b>Grading Criteria – Part 1 – Use of IT Tools and Techniques</b>		<b>Phase of Project Life Cycle</b>
1.1 The use of tools and techniques to initiate/plan	LO1	Initiation/Planning
1.2 The use of tools and techniques to import and manipulate data	LO3	Execution
1.3 The use of tools and techniques to select and present integrated information	LO4	Execution
<b>Grading Criteria – Part 2 – Project Life Cycle Processes and Methods</b>		
2.1 Analysis of brief and planning approach	LO1	Initiation/Planning
2.2 Importing and manipulating data	LO3	Execution
2.3 Selecting and presenting information	LO4	Execution
<b>Grading Criteria – Part 3 – Iterative Review</b>		
3.1 The iterative review and final review	LO2	Evaluation

Marking should be positive, rewarding achievement rather than penalising failure or omissions.

The award of marks **must be** directly related to the marking criteria.

- Each band descriptor covers all the relevant content for the learning outcomes.
- The descriptors should be read and applied as a whole.
- Make a 'best fit' match between the answer/evidence and the band descriptors.
- An answer/evidence does not have to meet all of the requirements of a band descriptor before being placed in that band. It will be placed in a particular band when it meets more of the requirements of that band than it meets the requirements of other bands.
- Where there is more than one strand within the band descriptors for a learning outcome, and a strand has not been addressed at all, it is still possible for the answer to be credited within that mark band depending upon the evidence provided for the remaining strands. The answer should be placed in the mark band most closely reflecting the standard achieved across all strands within the band descriptors for a learning outcome; however in this

scenario, the mark awarded for that band should reflect that a strand has not been addressed.

When deciding the mark within a band, the following criterion should be applied:

- the extent to which the statements within the band have been achieved.

For example:

### Marking Criteria

Using 'best-fit', decide first which set of marks best describes the overall quality of the answer. Once the band is located, adjust the mark concentrating on features of the answer which make it stronger or weaker following the guidelines for refinement.

**Highest mark:** If clear evidence of all the qualities in the band descriptors is shown, the HIGHEST Mark should be awarded.

**Lowest mark:** If the answer shows the candidate to be borderline (i.e. they have achieved all the qualities of the bands below and show limited evidence of meeting the criteria of the band in question), the LOWEST mark should be awarded.

**Middle mark(s):** This mark(s) should be used for candidates who are secure in the band. They are not 'borderline' but they have only achieved some of the qualities in the band descriptors.

Be prepared to use the full range of marks, e.g. do not reserve high band 3 marks 'in case' something turns up of a quality you have not yet seen. If an answer gives clear evidence of the qualities described in the band descriptors, reward appropriately.

### 6.5.2 Justifying marks given

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Each piece of internally assessed work should show how the marks have been awarded in relation to the marking criteria.

The writing of comments on learners' work, and Unit Recording Sheet (URS), provides a means of communication between teachers during the internal standardisation process and with the moderator if the work forms part of the moderation sample.

### 6.5.3 Presentation of the final piece of work

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To submit work for moderation teachers must complete and attach a Unit Recording Sheet (URS) that includes the following:

- marks given for each of the assessment criteria:
- centre number
- centre name
- candidate number
- candidate name
- unit code and title
- assignment title.

## 6.6 Submitting marks

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We provide information on how to submit marks on our webpages for Exams Officers.

There should be clear evidence that work has been attempted and some work produced. If a learner submits no work for assessment unit R013 then the learner should be indicated as being absent from that unit. If a learner completes any work at all for assessment unit R013, then the work should be assessed according to the marking criteria and the appropriate mark awarded, which may be zero.

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# 7 Moderation process and admin

## 7.1 Role of the moderator

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The role of the moderator is to confirm the internal assessment judgements that are made by you and your centre. The use of annotation and the completion of the Unit Recording Sheet (URS) must enable the moderator to understand the centre decision-making process around assessment so the marks awarded to candidates can be validated. Where there are problems, this is normally caused by a lack of relevant signposting, failure to apply best fit principles within the assessment evidence grid and missing evidence that is not available at the point of moderation. Above all else, moderation is not a 're-marking' exercise and should simply be a confirmatory exercise to validate any assessment decisions that have been made.

## 7.2 Preparing for moderation

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The purpose of external moderation is to ensure that the standard of marking is the same for each centre and to ensure that internal standardisation has taken place.

Centres can select from:

- **Moderated via OCR Repository**
- **Moderated via postal moderation**

Centres must ensure when selecting a moderation method that the appropriate entry and marks submission deadlines can be adhered to. See key dates and timetables on the [OCR website](#).

For moderation to happen centres must submit their marks. This is known as making a claim.

When making your entries, the entry option specifies how the work is going to be moderated.

You have a choice of moderation methods. You indicate your choice of method using an entry option. You must use the same moderation method for **all** learners who are taking assessment unit R013, Developing technological solutions, **in the same** series. You can choose a different moderation method for a different series.

## 7.3 Moderated via postal moderation

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Your sample of work must be posted to the moderator within three days of receiving the request. You should use one of the labels provided by OCR to send learners' work.

We would advise you to keep evidence of work submitted to the moderator (e.g. copies of written work or photographs of practical work). You should also obtain a certificate of posting for all work that is posted to the moderator.

Work may be submitted in digital format (for example on a memory stick or CD) for moderation but must be in a suitable file format and structure as detailed in Appendix A at the end of this specification.

## 7.4 Moderated via OCR Repository

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Centres can access the OCR Repository via OCR Interchange, find their candidate entries in their area of the Repository, and use it to upload files (singly or in bulk) for access by their moderator.

The OCR Repository:

- is a secure website for centres to upload candidate work and for assessors to access this work digitally. Centres can use the OCR Repository for uploading marked candidate work for moderation.
- allows candidates to produce evidence and files that would normally be difficult for postal submissions, for example multimedia and other interactive submissions.
- is seen as a faster, greener and more convenient means of providing work for assessment. It is part of a wider programme bringing digital technology to the assessment process, the aim of which is to provide simpler and easier administration for centres.

If the OCR Repository is used, all files should be clearly numbered and titled, and where combined electronically (for example in a pdf), these should be in a logical order as they would be in a physical portfolio.

The moderated assessment unit (R013) can be submitted electronically to the OCR Repository via Interchange. Please check section 9.4.2 for the entry code for the OCR Repository.

There are three ways to upload files to the OCR Repository:

1. Centres can upload multiple files against multiple candidates by clicking on 'Upload candidate files' in the 'Candidates' tab of the Candidate Overview screen.
2. Centres can upload multiple files against a specific candidate by clicking on 'Upload files' in the 'Candidate Details' screen.
3. Centres can upload multiple administration files by clicking on 'Upload admin files' in the 'Administration' tab of the Candidate Overview screen.

Instructions for how to upload files to OCR using the OCR Repository can be found on [OCR Interchange](#).

## 7.5 Sample requests

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Once you have submitted your marks, your exams officer will receive an email telling you which work will be sampled as part of the moderation. Samples will include work from across the range of attainment of learners' work.

Each learner's work must have a Unit Recording Sheet (URS) attached to it with a summary of the marks awarded for the task. If the work is to be submitted via OCR Repository, this URS must also be submitted electronically within each learner's files.

OCR will require some centres to release work for awarding and archive purposes and the cooperation of the centre is most appreciated in these instances, as it is imperative to have work available at awarding meetings. If this is required, then centres will be notified as early as possible.

Centres will receive the final outcome of moderation when the provisional results are issued. The following reports will be issued via Interchange:



- Moderation adjustments report – this lists any scaling that has been applied to the internally assessed unit
- Moderator report to centres – this is a brief report by the moderator on the internal assessment of learners' work.

## 7.6 Reporting suspected malpractice

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It is the responsibility of the Head of Centre<sup>1</sup> to report all cases of suspected malpractice involving centre staff or candidates. A JCQ Report of Suspected Malpractice form (JCQ/M1 for candidate suspected malpractice or JCQ/M2a for staff suspected malpractice) is available to download from the [JCQ website \(www.jcq.org.uk/exams-office/malpractice\)](http://www.jcq.org.uk/exams-office/malpractice) and should be completed as soon as possible and emailed to [malpractice@ocr.org.uk](mailto:malpractice@ocr.org.uk).

When asked to do so by OCR, Heads of Centres are required to investigate instances of malpractice promptly and report the outcomes to OCR.

Further information regarding reporting and investigating suspected malpractice, and the possible sanctions and penalties which could be imposed, is contained in the JCQ publication: *General and Vocational Qualifications – Suspected Malpractice in Examinations and Assessments* which is available from the [JCQ website](http://www.jcq.org.uk). Centres may also like to refer to the [OCR Website](http://www.ocr.org.uk) for more details.

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<sup>1</sup> This is the most senior officer in the organisation, directly responsible for the delivery of OCR qualifications, e.g. the Head Teacher or Principal of a school/college. The Head of Centre accepts full responsibility for the correct administration and conduct of OCR exams

# 8 Support for Cambridge National in Information Technologies

## 8.1 Free resources available from the OCR website

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The following materials are available on the OCR website:

- specification
- sample assessment material for assessment unit R012 - Understanding tools, techniques, methods and processes for technological solutions
- sample assignment for assessment unit R013 - Developing technological solutions
- OCR-set assignments for the internally assessed unit R013.

OCR will produce a range of resources, all available free of charge from the [OCR website](#).

## 8.2 Online community

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To share and swap ideas for delivery, post questions, support other tutors, suggest ideas for employer engagement, share links to other teaching and learning resource and more, visit our online community <http://social.ocr.org.uk/>.

## 8.3 Active Results

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Active Results is available to all centres offering the Cambridge Nationals qualifications.

**active**results

Active Results is a free results analysis service to help teachers review the performance of individual learners or whole schools.

Devised specifically for the UK market, data can be analysed using filters on several categories such as gender and other demographic information, as well as providing breakdowns of results by question and topic.

Active Results allows you to look in greater detail at your results:

- richer and more granular data will be made available to centres including question-level data available from e-marking for assessment unit R012 (exam)
- you can identify the strengths and weaknesses of individual learners and your centre's cohort as a whole
- our systems have been developed in close consultation with teachers so that the technology delivers what you need.

Further information on Active Results can be found on the [OCR website](#).

# 9 Administration

For information on how to administer these qualifications please follow the link to OCR's Administration area, <http://www.ocr.org.uk/administration/>.

## 9.1 Availability of assessment

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There will be assessment series in every year for both assessment units

Assessment Unit R012, Understanding tools, techniques, methods and processes for technological solutions, is examined and the first assessment is to be confirmed but there will be at least two series every year after the first year.

Assessment Units R013, Developing technological solutions, is internally assessed and OCR-moderated. The first assessment is to be confirmed but there will be at least two series every year after the first year. Work is produced by following an OCR-set assignment. Once an OCR assignment has been released it will be available for a specified number of series. The series in which it can be used will be stated on the assignment.

Learners can be entered for different assessment units in different assessment series.

Learners must have completed both assessment units R012 and R013 before they can they can make an entry for certification.

## 9.2 Equality Act information

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The Cambridge National in Information Technologies requires assessment of a broad range of skills and, as such, prepares learners for further study and higher level courses.

It has been reviewed to identify whether any of the competences required by the subject presented a potential barrier to any learners with disabilities and to ensure that such competences were included only where essential to the subject.

## 9.3 Access arrangements and special consideration

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There can be adjustments to standard assessment arrangements on the basis of the individual needs of learners. It's important that you identify as early as possible whether learners have disabilities or particular difficulties that will put them at a disadvantage in the assessment situation and choose a qualification or adjustment that allows them to demonstrate attainment.

If a successful application for an access arrangement has been made for either GCSE or GCE, then there is no need to make an additional application for the same learner completing a Cambridge National qualification.

The responsibility for providing adjustments to assessment is shared between your centre and us. Please read the JCQ booklet *Access Arrangements and Reasonable Adjustments* at [www.jcq.org.uk](http://www.jcq.org.uk).

If you have learners who need a post-examination adjustment to reflect temporary illness, indisposition or injury when they took the assessment, please read the JCQ documents *A guide to the special consideration process*.

If you think any aspect of these qualifications unfairly restricts access and progression, please email or call our Customer Contact Centre.

The access arrangements permissible for use in this specification are as follows:

Access arrangement	Yes/No	Type of assessment
Readers	Yes	All assessments
Scribes	Yes	All assessments
Practical assistants	Yes	All assessments
Word processors	Yes	All assessments
Transcripts	Yes	All assessments
BSL interpreters	Yes	All assessments
Oral language modifiers	Yes	All assessments
Modified question papers	Yes	All assessments
Extra time	Yes	All assessments

## 9.4 Requirements for making an entry

We provide information on key dates, timetables and how to submit marks on our webpages for exam officers.

Centres must be registered with OCR in order to make any entries, including estimated entries. It is recommended that centres apply to OCR to become a registered centre well in advance of making their first entries. Details on how to register with OCR can be found on the [OCR website](#).

**It is essential** that unit entry codes are quoted in all correspondence with OCR.

### 9.4.1 Making estimated unit entries

Estimated entries must be made prior to each assessment series. Estimated entries are used by OCR to allocate examiners and moderators to centres.

### 9.4.2 Making final unit entries

When making an entry, centres must quote unit entry code and component codes. For the internally assessed unit, centres must decide whether they want to submit candidates' work for moderation via the OCR Repository, or via postal moderation. Candidates submitting work must be entered for the appropriate unit entry code. We will confirm the codes in the next version of the specification.

Unit entry code	Component code	Assessment method	Assessment unit titles
R012	01	Written paper	<i>Understanding tools, techniques, methods and processes for technological solutions</i>
R013	01	Moderated via OCR Repository	<i>Developing technological solutions</i>
R013	02	Moderated via postal moderation	

The short title for these Cambridge National qualifications is CAMNAT and will display as such on Interchange and some administrative documents provided by OCR.

## 9.5 Certification rules

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Learners must be entered for qualification certification separately from unit assessment(s). If a certification entry is **not** made, no overall grade can be awarded.

Learners may be entered for:

- OCR Level 1/2 Cambridge National Certificate in Information Technologies- certification code J808

## 9.6 Resits

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Learners may resit each assessment unit and the best unit result will be used to calculate the certification result.

Learners may resit the external assessment R012, **once**.

Learners may resit the internally assessed R013, up to twice using the same OCR-set assignment and provided they submit marks to a series specified on the assignment. Centres are free to select to use a new assignment for resits. Centres must ensure that when arranging resit opportunities they are fair to all learners and do not give learners an unfair advantage over other learners. For example the learner must not have direct guidance and support from the teacher in producing further evidence for the internally assessed unit. When resitting the internally assessed unit (R013), learners must submit new, amended or enhanced work, as detailed in the *JCQ Instructions for conducting coursework*.

Centres must ensure that when arranging resit opportunities they do not adversely affect other assessments being taken.

Arranging a resit opportunity is at the centre's discretion; resits should only be planned if it is clear that the learner has taken full advantage of the first assessment opportunity and formative assessment process. The summative assessment series must not be used as a diagnostic tool.

## 9.7 Enquiries about results

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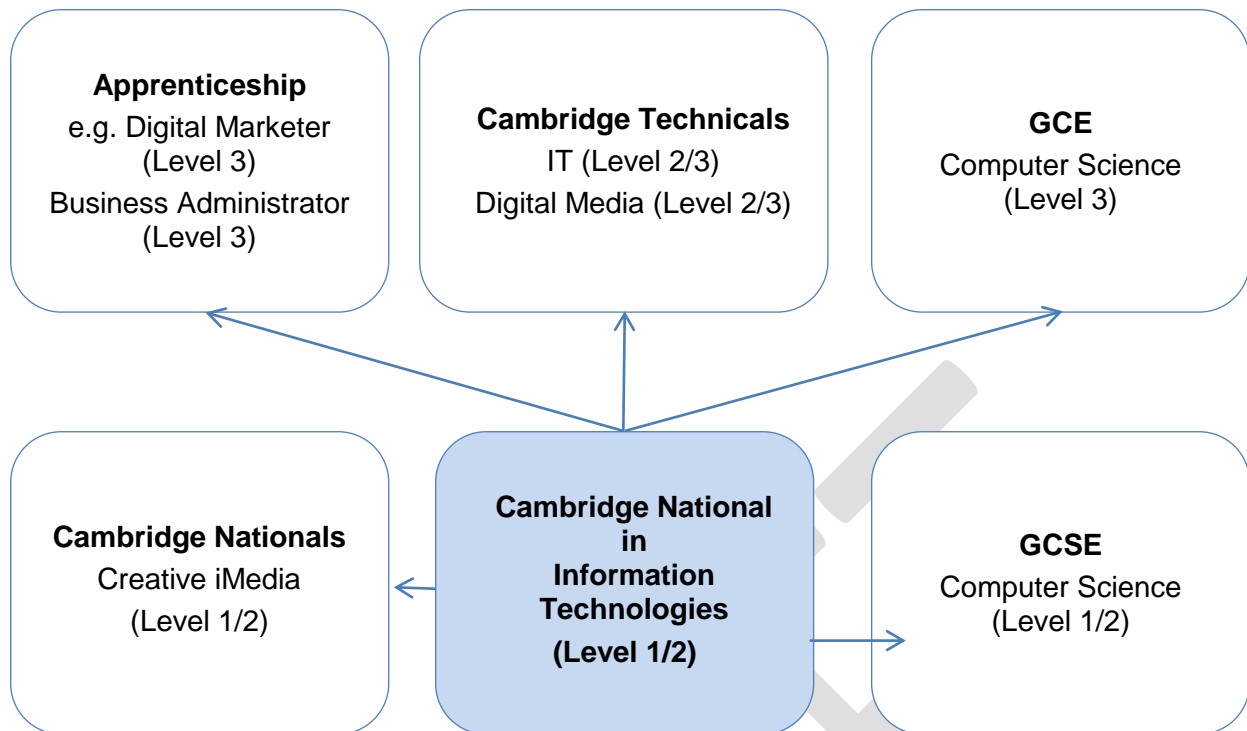
Under certain circumstances, you may wish to query the result issued to one or more learners.

To find out more about this, please refer to the JCQ Post-Results Services booklet and the Administration area, post results services, <http://www.ocr.org.uk/administration>.

# 10 Other information

## 10.1 Progression from this qualification

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OCR offers a range of general and vocational qualifications that allow suitable progression routes for all learners.

Centres are able to use these qualifications to provide learners with the underpinning skills and knowledge that will enable them to progress into further related study.

## 10.2 Avoidance of bias

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OCR has taken great care in preparing this specification and assessment materials to avoid bias of any kind. Special focus is given to the eight strands of the Equality Act with the aim of ensuring both direct and indirect discrimination is avoided.

# Appendix A: Guidance for the production of electronic evidence

## Structure for evidence

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For Assessment unit R013 the learner will produce a number of pieces of evidence to form a portfolio of evidence, stored electronically.

Learners should adopt best practice and make sure the location of their evidence is clear by naming each file and folder appropriately and by use of an index called 'Home Page'.

The top level folder should detail the learner's centre number; OCR candidate number, surname and forename, together with the assessment unit code R013, so that the portfolio is clearly identified as the work of one learner.

Each learner's internal assessment portfolio should be stored in a secure area on the centre's network. Prior to submitting the portfolio to OCR, the centre should add a folder containing the internal assessment and summary forms.

## Data formats for evidence

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To ensure compatibility, all files submitted electronically must be in standard file formats. Learners must use formats appropriate to the evidence that they are providing and appropriate to viewing for assessment and moderation. Open file formats or proprietary formats for which a downloadable reader or player is available are acceptable. Where this is not available, the file format is not acceptable.

Evidence submitted is likely to be in the form of word processed documents, presentation documents, digital photos and digital video.

Where new formats become available that might be acceptable, OCR will provide further guidance. OCR advises against changing the file format that the document was originally created in. Files should be exported in a generic format that can be opened on a PC computer system without any specialist software applications. It is the centre's responsibility to ensure that the electronic portfolios submitted for moderation are accessible to the moderator and fully represent the evidence available for each learner.

Standard file formats acceptable as evidence are listed on the next page (**please note not all these formats can be submitted via the OCR Repository**, see the following section):

Accepted File Formats for Cambridge Nationals (not OCR Repository)		
avi	odg	sxd
bmp	odp	sxi
csv	ods	sxw
doc	odt	tga
fla	pdf	tif
flv	png	txt
gif	pps	wav
jpg	ppt	wks
mov	psd	wma
mp3	rar	wmf
mp4	rtf	wmv
mpeg	swf	xls
mpg	sxc	zip

It is suggested that pdf files are supplied for native file types where possible.

N.B. Files created on a Mac must include the file extensions (e.g. webpage.html) to allow non-Mac users to open the files. When saving files created on a Mac you must make sure the final file is saved as a PC version to allow your work to be moderated.

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## Accepted File Formats for the OCR Repository

Movie formats for digital video evidence
MPEG (*.mpg)
QuickTime movie (*.mov)
Macromedia Shockwave (*.aam)
Macromedia Shockwave (*.dcr)
Flash (*.swf)
Windows Media File (*.wmf)
MPEG Video Layer 4 (*.mp4)
Audio or sound formats
MPEG Audio Layer 3 (*.mp3)
Graphics formats including photographic evidence
JPEG (*.jpg)
Graphics file (*.pcx)
MS bitmap (*.bmp)
GIF images (*.gif)
Animation formats
Macromedia Flash (*.fla)
Structured markup formats
XML (*.xml)
Text formats
Comma Separated Values (.csv)
PDF (.pdf)
Rich text format (.rtf)
Text document (.txt)
Microsoft Office suite
PowerPoint (.ppt)
Word (.doc)
Excel (.xls)
Visio (.vsd)
Project (.mpp)

# Appendix B: Purpose of the qualification

## OVERVIEW

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The collection and communication of data and information happens all around us. Technology underpins how it's collected and communicated nearly all of the time. It can be seen in all walks of life, from a wearable fitness tracker recording how many steps you have taken, your mobile phone provider recording your usage to create your bill or an online retailer being able to target you with specific promotions based on your purchase history. Knowing how and why data and information is gathered and being able to turn raw data into something meaningful is essential as you move through education and into employment. To be able to do this you will need to have the confidence to use a range of information technology that is currently available, as well as being adaptable and resilient enough to deal with the rapid advances.

## What will this qualification teach you?

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This qualification will teach you what different technology could be used, why you should use it and how to make best use of it, to gather, store, manipulate and present data; this is known as data management.

You will learn about tools and techniques for use in different digital hardware and software technologies, and how these can be integrated to create digital solutions to manage and communicate data and information. You will also be taught what data and information are and the legal and moral considerations when using technology to gather, store and present data and information, and how to mitigate the risks of cyber-attacks. Through this qualification you will be able to select and use the most appropriate technology safely and effectively, to complete a data management task such as a cable TV provider monitoring customers' viewing to make recommendations for additional packages in the customer's subscription.

You will also learn to follow a project life-cycle of initiation, planning, execution and evaluation to complete a data management task and use your skills, knowledge and understanding of technology to complete each of the stages of the project life-cycle.

The skills, knowledge and understanding you would develop through this qualification are very relevant to both work and further study. They will support you in a range of subject areas such as A Levels in Business or Geography, or Cambridge Technicals in IT. They can also support your progression into employment through Apprenticeships in areas such as Digital Marketer or Business Administrator.

## Who is this qualification for?

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You can take this qualification if you're 14 years old and moving into your Key Stage 4 programme of study and looking to combine your GCSE/vocational options with a vocational qualification in information and communication technologies.

If your interests are primarily around the development of computer networks or control systems and/or the creative and innovative design and creation of software programme solutions, then you should consider completing a GCSE in Computer Science. That will help you develop your computational analysis skills to allow you to solve problems and design systems and solutions.

If you are more creatively driven and have interests in the Media sector, including film, television, web development, gaming and animation, then you should consider completing the Cambridge Nationals in Creative iMedia. That teaches you to use IT to create digital solutions in the pre-production, production and post-production development life cycle of various media products.

## What about the assessment?

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### **Assessment unit R012 - Understanding tools, techniques, methods and processes for technological solutions**

You will sit an exam to assess your knowledge and understanding of different technologies (hardware and software applications), and tools and techniques used to select, store, manipulate and present data and information (e.g. using formulae to link data sets).

You will also be assessed on the stages of a project life cycle and the methods and processes that can be used to complete each of these which, combined with your understanding of information technologies, will prepare you for developing technological solutions.

You will need to understand the legal, moral, ethical, and security issues that can impact on collecting, storing and using data, and also the different risks associated with data and storage and how these can be mitigated.

This knowledge and understanding will help you to make decisions and appropriate choices when developing a technological solution, which you will be asked to do in the practical assignment.

### **Assessment Unit R013 –Developing technological solutions**

This assessment focuses on how effectively you use your skills when developing a technological solution.

You will be given a project to develop a technological solution that processes data and communicates information.

You will follow the project life cycle stages of initiation/planning, execution, communication and evaluation, demonstrating the practical skills you have acquired such as carrying out SWOT analyses, creating GANTT charts, developing online surveys, or presenting data through web-based technologies; keeping your project on track through on-going, iterative reviews.

You will use different hardware and software technologies to interrogate and model data to create, integrate and format a technological solution for data/information processing and communication.

The knowledge and understanding in this qualification will help you to make appropriate choices and decisions about the technological solution(s) you will develop. The skills in the qualification will help you to work effectively when developing a solution. Considering how your understanding can help you use your skills and how using your skills can improved your understanding, will help you succeed in this qualification.