

Cambridge NATIONALS LEVEL 1/2

Cambridge
NATIONALS

INFORMATION TECHNOLOGIES

Specification
J808

**OCR Level 1/Level 2 Cambridge National Certificate in Information
Technologies J808 – For first teaching September 2017**

Version 5 – September 2019
See Appendix B – Summary of key changes to specification

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OCR Level 1/Level 2 Cambridge National Certificate in Information Technologies

Qualification at a Glance

Qualification number	603/1311/0	OCR Entry code	J808
First registration date	01/09/2017	Approved age range	14-16
Guided learning hours (GLH)	120	Performance information	See section 1 performance information
Total qualification time	160	Eligible for funding	It's designed to meet the funding requirements of a 14-16 study programme.
This qualification has been designed	<ul style="list-style-type: none"> for learners aged 14-16 on a full-time study programme who wish to develop applied knowledge and practical skills in using information technologies to meet the Department for Education's characteristics for a Technical Award. 		
This qualification is suitable for learners	<ul style="list-style-type: none"> who want to progress onto other related study, such as qualifications in IT, Digital Media, Computer Science. 		
Entry requirements	It is expected that learners have followed the Key Stage 3 National Curriculum.		
Qualification structure	There are two units of assessment. Learners must complete both units of assessment to achieve the qualification.		
Resources needed for the delivery and assessment	Learners need access to computer equipment. We do not specify what software packages or hardware must be used, but a variety of software applications must be available to learners.		
Assessment method/model	Unit No.	Assessed By	Duration
	R012	Exam	1 hour 45 minutes
	R013	Internally marked and moderated by OCR	Approximately 20 hours
Exam series each year	<ul style="list-style-type: none"> January June 		
Grading	<p>All results are awarded on the following scale:</p> <p>Level 2 – Distinction* (*2), Distinction (D2), Merit (M2), Pass (P2)</p> <p>Level 1 – Distinction (D1), Merit (M1), Pass (P1) and Unclassified.</p>		
Resits	<p>Learners can resit the examined assessment unit once before they complete the qualification.</p> <p>Learners can resit the internally assessed task but must take a new OCR-set assignment.</p> <p>We'll use the best result for each assessment to calculate the certification result.</p> <p>See section 4.6 'Resits' for more information.</p>		

Overview

The collection and communication of data and storing of data/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 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 technologies could be used, why they should use them and how to make best use of them, 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, ethical 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 phases 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 the Cambridge Nationals in Creative iMedia. That will teach them to use IT to create digital solutions in the pre-production, production and post-production development life cycle of various media products.

Contents

OCR Level 1/Level 2 Cambridge National Certificate in Information Technologies	i
Qualification at a Glance	i
Statement of purpose	ii
Contents	1
1 About this qualification	4
1.1 Qualification size (GLH and TQT)	5
1.2 Delivery in Wales and Northern Ireland	5
1.3 Language	5
1.4 Performance information	5
1.5 Avoidance of bias	5
2 Teaching content and delivery guidance	7
2.1 Holistic delivery	7
2.2 Use of i.e./e.g. in teaching content	7
2.3 Learning outcomes, teaching content and delivery guidance	8
3 Assessments and Grading	26
3.1 Assessment structure	26
3.2 Grading and awarding grades	27
3.3 Aims of units of assessment	28
3.4 Synoptic assessment	29
3.5 Performance descriptors	30
3.6 Preparing for qualification delivery and assessment	32
3.7 Requirements and Guidance for delivering and marking (R013)	34
3.8 Feedback and authentication	37
3.9 Internal standardisation	39
3.10 Marking the practical assignment	40
3.11 Submitting Marks	42
3.12 External Moderation	42
3.13 Sample requests	44
3.14 Reporting suspected malpractice	44
3.15 Marking criteria for R013	45
3.16 Glossary of terms used in R012 and R013	49
4 Administration	52
4.1 Availability of assessment	52
4.2 Equality Act information relating to Cambridge Nationals in Information Technologies	52
4.3 Accessibility	52

4.4	Requirements for making an entry	53
4.5	Certification rules	54
4.6	Resits	54
4.7	Post-results services	54
<u>Appendix A: Guidance for the production of electronic evidence for unit R013</u>		55
	Assignment evidence	55
	Data formats for evidence	55
<u>Appendix B: Summary of key changes</u>		58

SECTION 1

SPECIFICATION OVERVIEW

1	About this qualification	4
1.1	<u>Qualification size (GLH and TQT)</u>	5
1.2	<u>Delivery in Wales and Northern Ireland</u>	5
1.3	<u>Language</u>	5
1.4	<u>Performance information</u>	5
1.5	<u>Avoidance of bias</u>	5



1 About this qualification

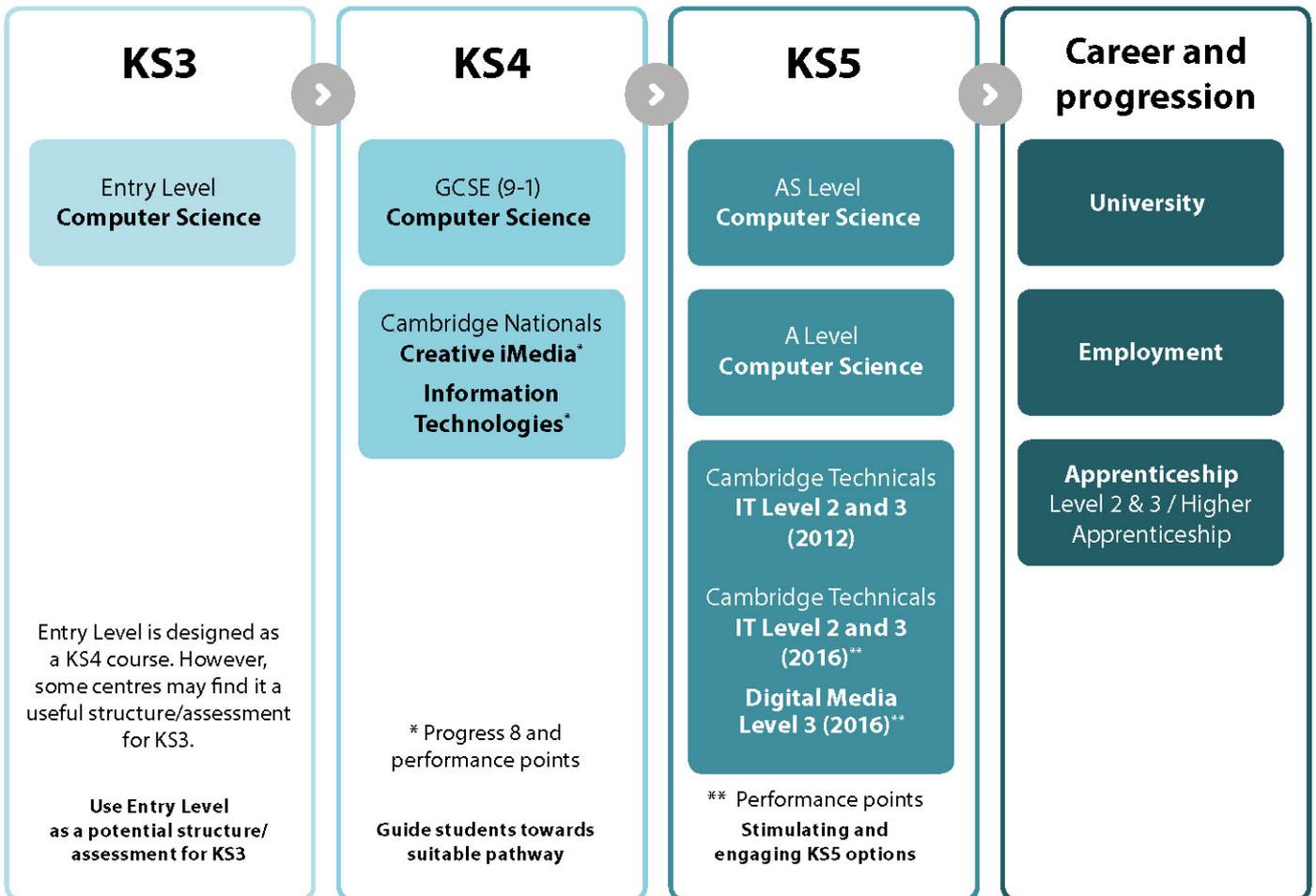
This specification is written for the teacher and for this qualification we assume the teacher is the assessor. It contains what you need to know about the planning, delivery and assessment of this qualification.

For information on how to administer this qualification follow the link to OCR's Administration area www.ocr.org.uk/administration/.

There is information for the learner about the purpose of the qualification and the assessments on page ii.

Progression from this qualification

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



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

1.1 Qualification size (GLH and TQT)

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 comprised of two elements: GLH, and an estimate of the number of hours a learner will reasonably spend on any unsupervised learning or assessment activities (including homework) so they can successfully achieve their qualification.

OCR Level 1/Level 2 Cambridge National Certificate in Information Technologies is 120 GLH and 160 TQT.

1.2 Delivery in Wales and Northern Ireland

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.

1.3 Language

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

1.4 Performance information

We've designed this qualification 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 of Education in Northern Ireland 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.

1.5 Avoidance of bias

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

SECTION 2

TEACHER CONTENT AND DELIVERY

2	Teaching content and delivery guidance	7
2.1	<u>Holistic delivery</u>	7
2.2	<u>Use of i.e./e.g. in teaching content</u>	7
2.3	<u>Learning outcomes, teaching content and delivery guidance</u>	8



2 Teaching content and delivery guidance

2.1 Holistic delivery

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 (LO) and teaching content are not separated into individual units of teaching. There are two assessments to be taken which relate to the unit of teaching and we refer to these as units of assessment. (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 interdependencies 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.

In the Expanded Scheme of Work and Teacher Delivery Packs we have signposted 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 have signpost opportunities for English and maths skills practice in our expanded scheme of work, which you can access from the qualification page of our website.

2.2 Use of i.e./e.g. in teaching content

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.

2.3 Learning outcomes, teaching content and delivery guidance

2.3.1 Initiate and plan

Teaching content		Delivery guidance															
Learning Outcome 1: Understand the tools and techniques that can be used to initiate and plan solutions																	
In this qualification and assessment materials we use the term 'phase' when referring to a project life cycle. The terms project life cycle stage or project life cycle step are also commonly used. Learners are free to use phase, stage or step in their assessment.																	
1.1	<p>Learners must be taught:</p> <ol style="list-style-type: none"> 1. The phases of the project life cycle and the tasks carried out in each phase i.e. <ol style="list-style-type: none"> a. initiation b. planning c. execution d. evaluation 2. the advantages of following a project life cycle 	There are many different project life cycles. The phases defined here are the phases which apply to this qualification.															
1.2	<p>The interaction and iteration between the phases of the project life cycle i.e.</p> <ol style="list-style-type: none"> 1. iterative reviews occur throughout the project life cycle at the end of every phase 2. the output from the reviews are the inputs into the next phase or they inform actions to be implemented within the current phase 																
1.3	<p>The inputs and outputs of each phase 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 and legislation implications Phase review and next steps</td> </tr> <tr> <td>Planning</td> <td>Feasibility report and 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 evaluation report</td> </tr> </tbody> </table>		Input	Output	Initiation	User requirements User constraints	Feasibility report and legislation implications Phase review and next steps	Planning	Feasibility report and 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 evaluation report	
	Input	Output															
Initiation	User requirements User constraints	Feasibility report and legislation implications Phase review and next steps															
Planning	Feasibility report and 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 evaluation report															

Teaching content		Delivery guidance
1.4	<p>Initial project considerations i.e.</p> <ol style="list-style-type: none"> 1. SMART (Specific, Measurable, Achievable, Realistic, Time) goals 2. user requirements 3. success criteria 4. constraints/limitations i.e. <ol style="list-style-type: none"> a. time b. resources c. regulations d. security/risk management e. mitigation of risks 5. the purpose and importance of setting objectives 	<p>Objective setting is one task within the initiation phase. Learners must be able to explain user requirements and produce success criteria for different contexts. They must 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> <ol style="list-style-type: none"> 1. purpose of planning tools i.e. <ol style="list-style-type: none"> a. Gantt b. PERT (Project Evaluation and Review Technique) c. critical path d. visualisation diagram e. flow chart f. mind map g. task list 2. components of the planning tools 3. advantages and disadvantages of different planning tools 4. software types used i.e. <ol style="list-style-type: none"> a. project management software b. spreadsheets c. word processors d. Desktop Publishing (DTP) 	<p>Learners must be able to recognise each planning tool and its purpose. They must be able to know about the components used in different planning tools. This should lead to learners being able to consider the advantages and disadvantages of using them.</p> <p>They must be able to evaluate multiple planning tools that could be used in different contexts including comparing these tools. They must be able to justify their selection of planning tool(s).</p> <p>For example, learners must be able to identify a PERT chart, explain its purpose, identify components within it and evaluate it against other planning tools.</p> <p>Critical path is about dependencies, contingencies and risk mitigation.</p> <p>Learners are not required to undertake a critical path analysis.</p>

Teaching content	Delivery guidance
Learning Outcome 2: To be able to initiate and plan a solution to meet an identified need	
<p>2.1 Learners must be taught:</p> <p>How to initiate a project by analysing the requirements to a given context i.e.</p> <ol style="list-style-type: none"> 1. key word analysis (e.g. select the important aspects of the brief) 2. carry out a SWOT analysis 3. how to create SMART objectives 4. scoping project into tasks and actions 5. creation of schedule for solution including: <ol style="list-style-type: none"> a. tasks b. activities c. workflow d. timescales e. resources f. milestones g. contingencies 	<p>Learners must be able to select the appropriate tools and techniques to allow them to initialise and plan a project effectively.</p> <p>It is important that learners are able to select, use and integrate appropriate software tools and techniques to effectively create a detailed project plan. Consequently, not every software tool and technique listed in the teaching content has to be used during the internal assessment.</p>
<p>2.2 How to mitigate risks through the planning process i.e.</p> <ol style="list-style-type: none"> 1. time issues - use of contingencies, workflow 2. resources - hardware, software 3. regulations - how to conform to various regulations, designs for how data will be protected 4. security - use of passwords to protect data from being viewed and/or edited 5. ethical and moral - avoiding defamation of character, misuse of data and equipment, bias 	
<p>2.3 Creating planning documentation using appropriate technology and planning tools i.e.</p> <ol style="list-style-type: none"> 1. project planning software (e.g. ProjectLibre, Microsoft Project, Gantt Project, Microsoft Excel) 2. project planning tools (e.g. Critical Path, GANTT, visualisation) 3. project documentation (e.g. data dictionaries, asset log, prototype, house style) 	<p>Learners must be able to select and use appropriate technology and tools to create the planning documentation.</p> <p>Access to the higher grading bands will be restricted if there is little use of appropriate technology and tools during the initialisation and planning phase.</p> <p>Project documentation examples:</p> <ul style="list-style-type: none"> • data dictionaries, asset log (e.g. hardware, software, images required) • prototype (e.g. digital design of screen layouts) • house style (e.g. colours, fonts, headings, borders, tables, image branding).

	Teaching content	Delivery guidance
2.4	<p>How to undertake iterative testing for i.e.</p> <ol style="list-style-type: none"> 1. functionality, how the various aspects of the solution work 2. usability, how easily the user can use the aspects of the solution 3. accessibility, how the solution caters for ‘users with a variety of different needs and abilities’ 4. creating and using a test plan i.e. <ol style="list-style-type: none"> a. test number b. test type (e.g. what are you testing) c. expected result d. actual result/evidence e. resolution f. retest number/evidence g. using i.e. <ol style="list-style-type: none"> i. normal data ii. erroneous data iii. extreme data 	<p>Learners must be able to create a test plan for their solution which can be used during the execution phase of the project and then referred to during both iterative reviews and final evaluation.</p>

2.3.2 Execute

Teaching content	Delivery guidance
Learning Outcome 3: Understand how data and information can be collected, stored and used	
<p>3.1 Learners must be taught:</p> <p>Data</p> <ol style="list-style-type: none"> 1. what data is 2. data types and appropriateness of the use of these in a given context i.e. <ol style="list-style-type: none"> a. text b. alphanumeric (e.g. combination of letters and numbers) c. numeric – integer, real, currency, percentage, fraction, decimal d. date/time e. limited choice (e.g. drop down lists, radio buttons, tick list) f. object g. logical/Boolean (e.g. yes/no true/false) 	<p>Learners must know that data is raw facts and figures before they have been processed.</p> <p>Learners must know what the data types are and understand how they are used in different contexts.</p> <p>Key Stage 3 expected prior learning:</p> <p><i>Learners should be aware of the differing data types from their Key Stage 3 study. They need to apply this knowledge to enable informed decisions to be made relating to the appropriate use of these in different contexts.</i></p>
<p>3.2 Information</p> <ol style="list-style-type: none"> 1. what information is 2. how data and information are related i.e. <ol style="list-style-type: none"> a. data must be processed to become information b. information is in context whilst data has no context c. information is data which has been coded, structured and has context 	<p>Learners must know that information is made by taking data and processing it:</p> <ul style="list-style-type: none"> • data + [structure] + [context] = Information
<p>3.3</p> <ol style="list-style-type: none"> 1. The methods used to collect data and store data/information, and the appropriateness of the use of these in a given context i.e. <ol style="list-style-type: none"> a. methods to collect and store i.e. <ol style="list-style-type: none"> i. questionnaires / surveys - online and hard copy ii. email iii. sensors iv. interviews v. consumer panels vi. loyalty schemes vii. statistical reports (e.g. Government departments) viii. secondary research methods (e.g. search engines) b. appropriateness of methods i.e. <ol style="list-style-type: none"> i. suitability ii. advantages iii. disadvantages 	<p>Learners must understand the different methods of collecting data and information and how IT can be used to support these activities.</p> <p>They must understand the advantages and disadvantages of each method and be able to select the appropriate collection method for different contexts, justifying their choice.</p> <p>Learners must, as part of this process, be able to compare the suitability and uses of two or more collection methods.</p>

Teaching content	Delivery guidance
<p>2. Information Technology (IT) used to support data collection, and the appropriateness of the use of these in context i.e.</p> <ol style="list-style-type: none"> a. barcode/QR code readers b. web-based surveys c. wearable technology d. mobile technologies 	
<p>3.4 Different storage methods and the appropriateness of the use of these in context i.e.</p> <ol style="list-style-type: none"> 1. cloud 2. physical devices 	<p>Learners must understand the different storage methods for data and information. They must be able to select, justifying their selection, the most appropriate method of storage for different contexts.</p>
<p>3.5</p> <ol style="list-style-type: none"> 1. The use of data in a given context including Big Data 2. Applications and interaction of data stores i.e. <ol style="list-style-type: none"> a. law enforcement b. education c. health and fitness d. shopping e. entertainment / leisure f. lifestyle 3. Benefits and drawbacks of the use of data 	<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 must understand the differing applications of data and how these stores of data can interact to share data and information. They must understand the difference between the interaction between big data sets and the holding of small data sets in different 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 must understand, for example, that errors in data is a drawback that can create a negative impact but the use of complete and correct data can have positive impacts and therefore is of benefit.</p>

Teaching content	Delivery guidance
Learning Outcome 4: Understand the factors to be considered when collecting and processing data and storing data/information	
<p>4.1 Learners must be taught:</p> <p>Types of threats i.e.</p> <ol style="list-style-type: none"> 1. Botnet 2. Malware i.e. <ol style="list-style-type: none"> a. adware b. bot c. bug d. ransomware e. rootkit f. spyware g. Trojan horse h. virus i. worm 3. Social engineering i.e. <ol style="list-style-type: none"> a. Phishing b. pretexting c. baiting d. quid pro quo e. tailgating/piggybacking f. shoulder surfing 4. Hacking i.e. <ol style="list-style-type: none"> a. white hat hacking - given permission to hack into systems to identify loopholes and weaknesses b. grey hat hacking - hacking into systems for 'fun' or to 'troll' c. black hat hacking - hacking into systems with malicious intent to steal, exploit and sell data 5. Distributed Denial of Service (DDoS) 6. Pharming 	<p>Learners must know the types of threats that exist when collecting, processing data and storing data/information. For example social engineering is the psychological manipulation of people into performing actions or divulging confidential information.</p> <p>They must understand:</p> <ul style="list-style-type: none"> • why threats are used by the attacker • how they work • how to mitigate against them.
<p>4.2 The vulnerabilities which can be exploited in a cyber-security attack i.e.</p> <ol style="list-style-type: none"> 1. environmental - natural disasters 2. physical - theft of identity, theft of property 3. system - insecure software applications, weak passwords, insecure modems 	<p>Learners must be able to identify vulnerabilities and understand how they can be exploited by an attacker. For example, a storage device could be vulnerable to physical attack if it is not adequately secured (for example, locking in a safe).</p>

Teaching content	Delivery guidance
<p>4.3</p> <ol style="list-style-type: none"> 1. The impacts of a cyber-security attack i.e. <ol style="list-style-type: none"> a. denial of service (DoS) to authorised others b. identify theft c. data destruction d. data manipulation e. data modification f. data theft 2. Consequences of a cyber-security attack <ol style="list-style-type: none"> a. loss <ol style="list-style-type: none"> i. financial ii. data iii. reputation b. disruption <ol style="list-style-type: none"> i. operational ii. financial iii. commercial c. safety <ol style="list-style-type: none"> i. individuals ii. equipment iii. finance 	<p>Learners must 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</p> <p>Prevention measures i.e.</p> <ol style="list-style-type: none"> 1. physical i.e. <ol style="list-style-type: none"> a. biometric access device b. emerging measures 2. logical i.e. <ol style="list-style-type: none"> a. access rights and permissions including authentication, usernames and passwords b. anti-virus software c. encryption d. secure backups of data e. emerging measures 3. secure destruction of data i.e. <ol style="list-style-type: none"> a. over writing b. magnetic wipe c. physical destruction 	<p>Learners must know what the different prevention measures are (both physical and logical). Learners must understand how these different prevention measures are used.</p> <p>Learners must understand how to mitigate risks, for example, what steps can be taken to mitigate risks and why.</p>

Teaching content	Delivery guidance
<p>4.5 Current relevant IT legislation, at time of delivery, its implications and applications i.e.</p> <ol style="list-style-type: none"> 1. legal protection of i.e. <ol style="list-style-type: none"> a. individuals b. organisations c. technological equipment d. data e. information f. intellectual property 2. ethical and moral i.e. <ol style="list-style-type: none"> a. avoiding defamation of character b. misuse of data, information and equipment 	<p>Learners need to know what the legislation/Acts are and their purpose. They need to know what to do to abide to them. They must be able to apply this knowledge to different contexts.</p> <p>Learners must be able to explain the implications of the current relevant IT legislation for an individual, for an organisation and on the data, including when dealing with cyber-security issues.</p> <p>For example, to comply with the Data Protection Act, when learners are collecting, processing and storing sensitive data, they must know what they can collect, how they can use it and how they should protect it.</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Key Stage 3 expected prior learning:</p> <p><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 through this learning outcome, to enable informed decisions to be made about the application of the legislation to different contexts. Learners must understand how to adhere to current legislation and Acts when collecting and processing data and storing data/information.</i></p> </div>
<p>4.6 The importance of validity, reliability and bias when collecting and using data and information</p>	<p>Learners need to understand the implications of validity, reliability and bias of data and information when collecting, processing and using internal or external data and information sources. Learners must understand the factors that should be considered when assessing any external sources of data and information they may use, for example:</p> <ul style="list-style-type: none"> • source (who is it from) • their agenda/point of view • timeliness/how up to date • accuracy.

Teaching content	Delivery guidance
Learning Outcome 5: To be able to import and manipulate data to develop a solution to meet an identified need	
<p>5.1 Learners must be taught: How to create, edit, delete and process data using appropriate software tools and techniques including:</p> <ol style="list-style-type: none"> 1. spreadsheet software i.e. <ol style="list-style-type: none"> a. functions i.e. <ol style="list-style-type: none"> i. arithmetic and rounding - SUMPRODUCT, ROUNDUP, ROUNDDOWN, ROUND ii. decision making and error-trapping - IF, IFERROR iii. lookup - VLOOKUP, INDEX, INDIRECT, MATCH iv. joining/splitting and presenting text - CONCATENATE/CONCAT, TEXTJOIN, LEFT, RIGHT, UPPER, PROPER v. date/time - DATE, NOW vi. counting and adding cells that meet certain criteria - COUNTIF, SUMIF, SUBTOTAL b. absolute cell referencing c. linking worksheets d. what if analysis e. macros i.e. <ol style="list-style-type: none"> i. close/open objects ii. carry out repetitive processes iii. print and close f. import data from different sources i.e. <ol style="list-style-type: none"> i. www ii. surveys iii. social media iv. sensors v. emerging technologies vi. other file types g. link to external data h. how to present data using i.e. <ol style="list-style-type: none"> i. pivot charts/tables ii. dynamic charts iii. combination charts i. hide/unhide columns rows j. applying security measures to i.e. <ol style="list-style-type: none"> i. sheets ii. cells iii. open documents iv. allow read only access k. export and link data to other applications/technologies (e.g. hyperlink a spreadsheet to a presentation, meaning that the data within the presentation is 	<p>Learners must be able to select the appropriate tools and techniques to allow them to create, edit, delete and process data effectively to develop an effective data handling solution.</p> <p>Learners must be able to select, use and integrate an appropriate range of tools to securely import, manipulate and store data effectively. It is the appropriate use of the tools to create an effective data handling solution that is important. Consequently not every tool listed in the teaching content has to be used during the internal assessment.</p> <div style="background-color: #e0e0e0; padding: 10px; margin-top: 10px;"> <p>Key Stage 3 expected prior learning:</p> <p><i>The following content is expected prior learning at Key Stage 3.</i></p> <ul style="list-style-type: none"> • Basic formulae (addition, subtraction, multiplication, division, using multiple cells) • Relative cell referencing • Appropriate naming conventions for worksheets and files • Basic and appropriate formatting of appearance • Built in functions (SUM, MIN, MAX, AVERAGE) • BODMAS • Simple charts (bar chart, pie chart, line graph) • Data types • Flat file database • Primary key • Single table query • Sorting data • Report from simple query • Report from single table • Boolean operators in queries • House style. </div>

Teaching content	Delivery guidance
<p>automatically updated with any subsequent changes to the data)</p> <p>2. Database software i.e.</p> <ul style="list-style-type: none"> a. relational database i.e. two tables or more linked by foreign keys b. import data from i.e. <ul style="list-style-type: none"> i. www ii. surveys iii. social media iv. sensors v. emerging technologies vi. other file types c. data validation techniques i.e. <ul style="list-style-type: none"> i. presence check ii. length check iii. format check iv. lookup value v. range check vi. input masks d. create and use i.e. <ul style="list-style-type: none"> i. input forms - multiple table entry, sub forms, list box, check box, text field ii. controls - via use of macros (e.g. from switchboard/dashboard to navigate between aspects of the database) e. design and create queries using i.e. <ul style="list-style-type: none"> i. multiple tables ii. wildcards iii. parameters iv. crosstab v. grouping data in query - SUM, MAX, MIN vi. complex query i.e. multiple criteria search f. design and create reports using i.e. <ul style="list-style-type: none"> i. multiple tables ii. results of complex queries g. applying appropriate security measures to i.e. <ul style="list-style-type: none"> i. tables ii. queries iii. forms iv. reports v. database h. 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) 	

2.3.3 Communicate

Teaching content	Delivery guidance
Learning Outcome 6: Understand the different methods of processing data and presenting information	
<p>6.1 Learners must be taught: Selection and justification of the appropriate software tools and techniques to process data to meet the defined objectives in a given context i.e.</p> <ol style="list-style-type: none"> 1. Tools i.e. <ol style="list-style-type: none"> a. spreadsheet b. databases 	<div style="background-color: #e0e0e0; padding: 10px; border: 1px solid #ccc;"> <p>Key Stage 3 expected prior learning:</p> <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> </div> <p>At Key Stage 4, learners must be taught how to select the most appropriate tools and techniques to be used to process information and data for different contexts. They need to understand that different tools and techniques can be used to meet the defined objectives depending on the desired outcome.</p>
<p>6.2</p> <ol style="list-style-type: none"> 1. Selection of the appropriate software tools and techniques to present information to meet the defined objectives in a given context. Justification of the use of the selected tool and format i.e. <ol style="list-style-type: none"> a. word processor b. spreadsheet c. databases d. desktop publishing (DTP) e. presentation software 2. The purpose and suitability of methods of presenting information i.e. <ol style="list-style-type: none"> a. target audience <ol style="list-style-type: none"> i. demographics i.e. <ol style="list-style-type: none"> 1. gender 2. age 3. ethnicity 4. income 5. location 6. accessibility ii. visibility <ol style="list-style-type: none"> 1. public facing i.e. website 2. targeted i.e. email b. content limitations c. availability of information i.e. <ol style="list-style-type: none"> i. real-time (e.g. travel, traffic, weather) 	<p>Learners must understand the purpose of different methods of processing and presenting information and be able to apply this to different contexts.</p> <p>They must understand that different methods have advantages and disadvantages and be able to use these to select methods, justifying their choice, for different contexts.</p>

Teaching content	Delivery guidance
<ul style="list-style-type: none"> ii. location iii. delay effects d. what impact is to be achieved from distributing information e. selecting how the information is shared across distribution channels by individuals or organisations i.e. <ul style="list-style-type: none"> i. messaging services i.e. <ul style="list-style-type: none"> 1. email 2. social media for business (e.g. LinkedIn, iMessage, Twitter, Instagram, Facebook WhatsApp) 3. internal messaging services (e.g. Moodle) ii. websites i.e. <ul style="list-style-type: none"> 1. Blogs 2. vLogs 3. intranet 4. internet site 5. internal website iii. Voice over Internet Protocol (VOIP) i.e. <ul style="list-style-type: none"> 1. Skype 2. Lync 3. Podcast iv. Multimedia i.e. <ul style="list-style-type: none"> 1. YouTube 2. Web Conference v. Cloud Based (e.g. Google Drive, Office 365) vi. Mobile Apps (e.g. fitness app, travel app) f. selection of presentation method i.e. <ul style="list-style-type: none"> i. report (e.g. formal business report) ii. presentation (e.g. presentation to company board, presentation to customers) iii. graphs/charts i.e. <ul style="list-style-type: none"> 1. pivot 2. line 3. bar 4. pie 5. dynamic iv. tables (e.g. table of results) v. integrated documents (e.g. document featuring components from other documents) vi. end user documentation i.e. <ul style="list-style-type: none"> 1. user guide 2. installation guide 3. The advantages and disadvantages of methods used for presenting information. 	

Teaching content	Delivery guidance
<p>6.3 The resources required for presenting information and the appropriateness of the use of these in context i.e.</p> <ol style="list-style-type: none"> 1. hardware requirements 2. software requirements 3. connectivity requirements 	<div style="background-color: #e0e0e0; padding: 10px; margin-bottom: 10px;"> <p>Key Stage 3 expected prior learning: <i>Learners should be aware of the hardware and software types from their Key Stage 3 study.</i></p> </div> <p>While selecting presentation method(s) learners need to consider the hardware and/or software resources required along with any connectivity requirements. For example, if a resource is to be stored and shared online, then all users of the resource must have internet connectivity to enable them to access the resource.</p>

Teaching content	Delivery guidance
Learning Outcome 7: To be able to select and present information in the development of the solution to meet an identified need	
7.1 Learners must be taught: How to select and extract data for an identified need	Learners can present datasets/ information selecting from a wide range of media distribution channels (see 6.2.2), for example:
7.2 How to present information using appropriate software tools and techniques i.e. 1. word processing/desktop publishing (DTP) i.e. a. convert table to text and text to table b. use referencing tools i.e. i. footnotes ii. endnotes iii. captions c. create tables of contents and indexes d. advanced mail merge - linking from external data sources (e.g. databases/spreadsheets) e. use of macros for automation of tasks (e.g. navigation) f. link and embed to integrate data g. use of watermarks, sections, headers, and footers h. document review i.e. i. comments ii. tracking amendments iii. reading ability (e.g. Flesch-Kincaid) i. apply appropriate security measures to documents j. save and export in appropriate formats (e.g. for import into other software, accessibility regardless of platform) 2. presentation techniques i.e. a. enhancing text and objects i.e. i. text anchoring ii. advanced drawing tools i.e. 1. layering 2. grouping 3. flipping 4. rotating iii. scaling b. managing slideshows i.e. i. sound ii. video iii. iv. branching slideshows (e.g. running a slideshow from within a slideshow) v. non - linear slideshows c. presentation techniques - effective use of speaker notes d. customising i.e.	<ul style="list-style-type: none"> • websites • mobile apps • messaging services • VOIP • social media • DTP • word processing • multimedia presentations <p>It is important that learners must be able to select, use and integrate appropriate software tools and techniques to present integrated information accurately and appropriately to an intended audience. Consequently, not every tool and technique listed in the teaching content has to be used during the internal assessment.</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Key Stage 3 expected prior learning:</p> <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"> • <i>Fonts (Size, colour, emphasis, typeface)</i> • <i>Bullets</i> • <i>Alignment</i> • <i>Page backgrounds (colour, image (pixelate))</i> • <i>Page set up (margins, line spacing, indentation, text wrap, orientation, layers, positioning, columns)</i> • <i>Fields</i> • <i>Slide transitions</i> • <i>Spelling and grammar check</i> • <i>Proof reading</i> • <i>Word count</i> </div>

Teaching content	Delivery guidance
<ul style="list-style-type: none"> i. master pages ii. appropriate change of colours and backgrounds iii. modifying templates e. integrating with other applications i.e. <ul style="list-style-type: none"> i. text to presentation ii. presentation to text iii. embedding of spreadsheet charts and graphs iv. editing of embedded objects v. linking objects vi. launching applications from within a presentation vii. launching websites f. applying appropriate security measures to documents g. saving and exporting in appropriate formats 3. web/mobile technologies, i.e. <ul style="list-style-type: none"> a. HTML to create and layout electronic/digital documents b. use of cascading style sheets (CSS) to enhance look of electronic/digital documents (e.g. use of wizards) c. applying appropriate security measures d. consideration of aesthetics and information design (e.g. appearance, usability, accessibility) 	<ul style="list-style-type: none"> • <i>Hyperlinks</i> • <i>House style</i> • <i>Borders</i> • <i>Fills</i> • <i>Shadows</i> • <i>Animation and transition effects</i> • <i>Excessive text content on each slide</i> • <i>Aesthetics</i> • <i>Printing slides in relevant formats (e.g. for delegates for presenter).</i>

2.3.4 Iterative review and final evaluation

Teaching content	Delivery guidance
Learning Outcome 8: To be able to iteratively review and evaluate the development of the solution	
<p>8.1 Learners must be taught:</p> <p>How to carry out and document an iterative review i.e.</p> <ol style="list-style-type: none"> 1. phase review, reviewing the following aspects at each phase of the project life cycle, considering: <ol style="list-style-type: none"> a. if on track/on schedule b. any issue(s) arising (e.g. technical, security, legal, usability) c. any questionnaire/survey(s) from user/audience d. resolutions to issues e. adaptations to original plan 2. final evaluation i.e. <ol style="list-style-type: none"> a. measure success against criteria/objectives b. review deviations from original plans c. project delivery on schedule d. effect of processes and resources on delivering solution - software selected, tools and techniques used, compatibility between software and systems e. maintainability - further development of system in future, use of emerging technologies, adapting to a changed environment 	<p>Learners must be able to carry out a detailed review of their project during/after:</p> <ul style="list-style-type: none"> • development of the data handling aspect of the project • development of the communication aspect of the project • the completion of the development of the project commenting upon the process undertaken and what future developments could take place. <p>Types of questions that could be asked in an iterative review/final evaluation:</p> <ul style="list-style-type: none"> • What do you think made this phase of the life cycle/solution a success? • What do you think made this phase of the life cycle/solution not a success? <p>When thinking about what went well and what didn't consider the following:</p> <ul style="list-style-type: none"> • Did you do what you planned to do? <ul style="list-style-type: none"> ○ Think back to the choices you made for each phase of the life cycle, did you make the right choices? <ul style="list-style-type: none"> ▪ If not, why not? ▪ What would you do differently? And why do you think this is a good idea? • Did you deviate from the plan? <ul style="list-style-type: none"> ○ If you did deviate: <ul style="list-style-type: none"> ▪ What was not working? ▪ Why do you think that was? ▪ What did you change? ▪ Why did you think this change was better than the original choice? • 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? • If you were repeating this phase/project would you do the same again? And why do you think that? • Did you consider everything you needed to consider in the planning phase? <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>

3 Assessments and Grading

3.1 Assessment structure

Entry code	Qualification title	GLH	Reference
J808	OCR Level 1/Level 2 Cambridge National Certificate in Information Technologies	120	603/1311/0
<p>There are two units of assessment.</p> <p>To claim the OCR Level 1/Level 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>			
Entry code R012 - Understanding tools, techniques, methods and processes for technological solutions			
<ul style="list-style-type: none"> 1 hour 45 minutes written examination 80 marks (120 UMS) OCR-set and marked Exam assessment in June 2018 and then every January and June. 	<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 and processing data and storing data/information</i></p> <p><i>LO6: Understand the different methods of processing data and presenting information.</i></p>		
Entry code R013 - Developing technological solutions			
<ul style="list-style-type: none"> Approximately 20 hours 80 marks (120 UMS) An assignment set by OCR, marked by teachers and moderated by OCR The assignment will include a context and set of tasks A new assignment will be released each series and published on the OCR website Assessment series in June 2018 and then in two series each year, January and June. 	<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 and evaluate the development of the solution.</i></p>		

3.2 Grading and awarding grades

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 different series and they can also resit assessment units. Please refer to section 4.6 [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	0

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

3.3 Aims of units of assessment

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.

They will also be assessed on what the phases of the project life cycle are, the interaction between the phases and the inputs and outputs within each phase. Using this understanding of the project life cycle, together with their knowledge of various information technologies, they will be prepared to develop technological solutions.

They will need to understand the different risks associated with the collection, storage and use of data and how the legal, moral, ethical and security issues can have an impact on organisations and individuals. They also need to understand how such risks 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 phases of initiation/planning, execution, communication and evaluation, demonstrating the practical skills they have acquired such as carrying out a SWOT analysis, creating GANTT charts, developing online surveys, and/or presenting data through web-based technologies; keeping their project on track through on-going, iterative reviews.

They will use different hardware and software technologies to create an integrated technological solution for data processing and communication of information.

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 improve their understanding, will help learners succeed in this qualification.

3.4 Synoptic assessment

Synoptic assessment is a critical aspect of the OCR Level 1/2 Cambridge National Certificate in Information Technologies. Assessment in this qualification is designed to require learners to draw on the skills, knowledge and understanding they have acquired through their studies and to utilise them in an appropriate and relevant way to complete the key tasks, leading to a more progressive and holistic understanding of the subject content.

The interdependence between the units of assessment will require learners to synthesize the knowledge, skills and understanding they develop from the taught content in the unit of teaching, in order to apply them to relevant contexts when they complete the assessments.

Project life cycle phases ¹	Knowledge and understanding required		Skills required	
Initiate and plan	LO1:	Understand the tools and techniques that can be used to initiate and plan solutions.	LO2:	To be able to initiate and plan a solution to meet an identified need.
Execute	LO3:	Understand how data and information can be collected, stored and used.	LO5:	To be able to import and manipulate data to develop a solution to meet an identified need.
	LO4:	Understand the factors to be considered when collecting and processing data and storing data/information.		
Communicate	LO6:	Understand the different methods of processing data and presenting information.	LO7:	To be able to select and present information in the development of the solution to meet an identified need.
Evaluation (Iterative review and final evaluation)			LO8:	To be able to iteratively review and evaluate the development of the solution.
	External assessment		Internal assessment	
	Knowledge and 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.

¹ In this qualification and assessment materials we use the term 'phase' when referring to a project life cycle. The terms project life cycle stage or project life cycle step are also commonly used. Learners are free to use phase, stage or step in their assessment.

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. For example, learners may be assessed on their knowledge and understanding of the phases of the project life cycle in the exam, but will evidence their application of these phases in the assignment.

To further establish the holistic approach, learners may be assessed on their knowledge and understanding of the tools and the software types used to develop project plans in the exam. However, the assignment will expect the learners to apply this learning by planning for and using the tools but will also assess their ability to integrate tools appropriately for the intended purpose.

3.5 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 advantages and disadvantages of using information technologies within each phase
- **effectively** plan, manipulate, process and communicate data and information through the **well-considered** selection and the use of ICT tools and techniques to deliver an **effective integrated** technology-based solution
- **effectively** and **appropriately** mitigate risks when manipulating and processing data and communicating information. This will also include a good understanding of how to mitigate risks when collecting data
- **consistently** apply iterative review techniques throughout the different phases of the project life cycle. There will also be an **effective** final evaluation against the original plan. Both the iterative review and the evaluation 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 advantages **and/or** disadvantages of using information technologies within each phase
- **adequately** plan, manipulate, process and communicate data and information through the selection and use of ICT tools and techniques, to deliver an **adequate** technology-based solution which **for the most part** is integrated
- mitigate risks when manipulating and processing data and communicating information although **some opportunities** for safe, secure, and responsible practices will be missed. This will also include some understanding of how to mitigate risks when collecting data
- apply iterative review techniques **through most of the** phases of the project life cycle although approach at times will **lack detail**. There will also be a **reasonable** final evaluation against the original plan. Both the iterative review and the evaluation 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 an **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 advantage(s) **or** disadvantage(s) of using information technologies within some of the phases
- plan, manipulate, process and communicate data and information in a **limited** way through the use of ICT tools and techniques to deliver a **simplistic** technology-based solution
- identified some of the risks associated with manipulating and processing data and communicating information. There is **limited** knowledge, if any, of how to mitigate those risks
- apply iterative review techniques through **some** of the phases of the project life cycle **and/or** provide a **limited** final evaluation against the original plan. The iterative review and/or evaluation will result in **limited** judgements and **some** conclusions but these will **lack** an explanation and at times **contradict** the approach taken.

3.6 Preparing for qualification delivery and assessment

Centre and teacher/assessor responsibilities

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 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 3.9)
- 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 3)
- centres must use the OCR-set assignment for Assessment Unit R013. These are released for each series and centres must check the OCR website to see which OCR-set assignment is available for a series (see [section 4.1](#))
- materials we set and provide for teacher-marked assignments are not used for practice (see [section 3.7](#))
- teachers refer to section 3.7, *Requirements and guidance for delivering and marking (R013)* 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](#)
- assessment of set assignments must adhere to JCQ [Instructions for Conducting Coursework](#), with the exception of the resit rule 18.2. If after moderation a learner wants to resit this assignment to improve their grade, they **must** take a new OCR-set assignment. A new assignment will be set for each series and then withdrawn (see [Resits](#) in section 4.6)

- 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, <https://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 3.14).

3.7 Requirements and Guidance for delivering and marking (R013)

OCR set assignments

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

OCR will release a new OCR-set assignment for each series. It is the centre's responsibility to download the OCR-set assignment from the OCR website.

Assessment of OCR-set assignments must adhere to JCQ [Instructions for Conducting Coursework](#), with the exception of the resit rule 18.2. If after moderation a learner wants to resit this assignment to improve their grade, they must take a new OCR-set assignment (see [Resits](#) in section 4.6).

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. Please note that failing to adhere to these requirements may be deemed to be malpractice.

Here is a summary of what we require you to do:

- you must only use our assignments for summative assessment
- you cannot use the OCR-set assignments that we issue for a series as practice materials (we make sample and practice materials available)
- you cannot change any aspect of the OCR-set assignments (scenarios or tasks)
- 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 is stated in the '*Teacher Guidance*' in the OCR-set assignment zipped file. 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 will use the '*Teacher Guidance*' provided in the OCR-set assignment zipped file
- 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 (if it is permitted that a learner is allowed to work outside the supervision of the teacher it will be stated in 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 produce templates, sentence starters or model answers for the OCR-set assignment and publish them online
 - you must not practice the OCR-set assignment tasks with the learners
 - you must not create practice assignments and practice data 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 3.7.1 and 3.8 on [Ways to authenticate work](#) and [Feedback](#))
- 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 learners
- learners can take the initiative to improve any element of their work as they work through the assignment
- before submitting marks to OCR, 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 only be generic and must be recorded and available to the moderator (see section 3.8 on [feedback to learners](#) and section 3.8.1 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 feedback
- neither centre staff nor learners can add, amend or remove any work after marks for the cohort have 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.

3.7.1 Ways to authenticate work

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.

3.7.2 Plagiarism

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 or the mark being significantly reduced.

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/>.

In the OCR set assignment, Learner Assessment material, we provide information for learners about plagiarism and referencing.

3.7.3 Supervision

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 and 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.

3.7.4 Use of questioning

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.

3.7.5 Learner and centre declarations

Both learners and teachers must declare that the work is the learner's own:

- **Each learner** 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 learner cannot confirm the authenticity of their work.**
- **Teachers** are required to declare that the work submitted for internal assessment is the learner's own work by completing a centre authentication form (CCS160) for each unit. Centre authentication forms should be retained within the centre until all post-results issues have been resolved.

3.7.6 Group working

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.

3.8 Feedback and authentication

Feedback to learners

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.

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. If this is not possible feedback 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.

3.8.1 Resubmitting work for (summative) assessment before submitting a final mark

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.

You must set a realistic date 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.

Neither you nor the learner can add, amend or remove any work after the final mark has been submitted to OCR for moderation.

If after moderation the learner wants to improve their marks they must take a new OCR-set assignment. See section 4.6 on [Resits](#).

3.8.2 General guidance on evidence

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. The final solution(s) must be provided for moderation.

See [Appendix A](#) for information on evidence format.

3.8.3 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 were asked and how the learner replied, to allow the assessment decision to be moderated.

3.8.4 Anonymising evidence

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.

3.9 Internal standardisation

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.

3.10 Marking the practical assignment

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 3.16 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.

3.10.1 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:

Grading Criteria – Part 1 – Use of IT Tools and Techniques	Learning Outcome	Phase of Project Life Cycle	Marks
1a The use of tools and techniques to initiate/plan	LO2	Initiation/Planning	10
1b The use of tools and techniques to import and manipulate data	LO5	Execution 1	10
1c The use of tools and techniques to select and present integrated information	LO7	Execution 2	10
Grading Criteria – Part 2 – Project Life Cycle Processes and Methods			
2a Analysis of brief and planning approach	LO2	Initiation/Planning	13
2b Importing and manipulating data	LO5	Execution 1	13
2c Selecting and presenting information	LO7	Execution 2	13
Grading Criteria – Part 3 – Evaluation (Iterative review and final evaluation)			
3a The iterative review and final evaluation	LO8	Evaluation	11

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, you should consider the extent to which the statements within the band have been achieved.

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 learner 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 learners 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.

3.10.2 Justifying marks given

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.

3.10.3 Presentation of the final piece of work

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
- series.

3.11 Submitting Marks

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

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.

3.12 External Moderation

3.12.1 Role of the moderator

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 learners 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.

3.12.2 Preparing for moderation

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.

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

You have a choice of moderation methods. When making your entries, the entry option allows you to specify how the work is going to be moderated (see [section 4.4.2](#) for entry codes).

Centres can select from:

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

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.

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](#).

3.12.3 Moderated via postal moderation

Work **should** 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.

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.

3.12.4 Moderated via OCR Repository

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 4.4.2](#) 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.

For file types that can be used in the OCR repository see [Appendix A](#). Instructions for how to upload files to OCR using the OCR Repository can be found on OCR [Interchange](#).

3.13 Sample requests

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 candidates' work.

Each candidate'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 candidate'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 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 candidates' work.

For information on how to administer this qualification please follow the link to OCR's Administration area, www.ocr.org.uk/administration/cambridge-nationals/.

3.14 Reporting suspected malpractice

It is the responsibility of the Head of Centre² 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) and should be completed as soon as possible and emailed to 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.

² 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.

3.15 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 6.5.1'

Project life cycle		Use of IT Tools and Techniques		
1a To initiate/plan	10 marks	MB1: 1 to 3 marks	MB2: 4 to 6 marks	MB3: 7 to 10 marks
		Limited 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.	Adequate 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.	Effective 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.
1b To import and manipulate data (Execution 1)	10 marks	MB1: 1 to 3 marks	MB2: 4 to 6 marks	MB3: 7 to 10 marks
		Limited 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.	Adequate 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.	Effective 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.
1c To select and present integrated information (Execution 2)	10 marks	MB1: 1 to 3 marks	MB2: 4 to 6 marks	MB3: 7 to 10 marks
		Limited 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.	Adequate 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.	Effective 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.

Project life cycle		Project Life Cycle Processes and Methods		
2a Analysis of brief and planning approach (Initiation/ planning)	13 marks	MB1: 1 to 4 marks	MB2: 5 to 8 marks	MB3: 9 to 13 marks
		<p>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 described.</p> <p>Constraints, risks, resources and milestones have been identified although some obvious ones have been missed and no links are made between them.</p> <p>Although there are obvious gaps in planning activities, the plan is feasible.</p>	<p>Objectives and requirements are stated. There are logical dependencies shown for some tasks and sub-tasks although it is not presented as a critical path. There is an explanation behind the choice of success criteria.</p> <p>Links between constraints, risks and resources have been identified although some links are missed or not made clear. Ways to mitigate are stated but the consequences of actions are not evidenced.</p>	<p>Objectives and requirements are stated. A critical path is defined, with logical dependencies shown between key milestones and sub-tasks. There is a justification of the success criteria chosen.</p> <p>Links between constraints, risks and resources are clearly defined and contingencies identified. Mitigation for the plan is explained.</p>
2b Importing and manipulating data (Execution 1)	13 marks	MB1: 1 to 4 marks	MB2: 5 to 8 marks	MB3: 9 to 13 marks
		<p>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.</p> <p>The solution is open to security and legal risks.</p>	<p>The solution allows for data to be imported and manipulated so that most of the requirements of the project can be met. There are some inefficiencies but they will not impact on meeting the requirements.</p> <p>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 preserve data integrity by protecting the data from malicious intent and/or unauthorised access. Some opportunities for safe, secure and responsible practices have been missed.</p>	<p>The solution allows for data to be imported and manipulated efficiently and effectively so that all requirements of the project can be met.</p> <p>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 preserve data integrity by protecting the data from malicious intent and/or unauthorised access. This takes into account both how the data will be processed and how the information will be presented.</p>

		MB1: 1 to 4 marks	MB2: 5 to 8 marks	MB3: 9 to 13 marks
<p>2c</p> <p>Selecting and presenting information</p> <p>(Execution 2)</p>	<p>13 marks</p>	<p>The data created has only been used in a minimal way to support the information being presented.</p>	<p>The data is suitably used to support the information being presented which addresses some of the project requirements.</p>	<p>The data is suitably used to support the information being presented which addresses all of the project requirements.</p>
		<p>Nonetheless information has been communicated to address some of the requirements of the project. How the data has been structured will 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 selected communication method.</p>	<p>Different methods have been selected for different audiences but what is used is passable for the type of information and its audience. There is some integration between processed data and the communication methods. The quality and quantity of information provided meets the requirements of each audience, but there will be some instances of misinformation. Only one distribution channel has been selected to communicate the information to all audiences.</p>	<p>They have utilised suitable opportunities to integrate processed data with communication 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>

Project life cycle	Evaluation		
	MB1: 1 to 3 marks	MB2: 4 to 7 marks	MB3: 8 to 11 marks
<p>3a</p> <p>Iterative review and final evaluation (Evaluation)</p>	<p>11 marks</p> <p>There is an attempt to carry out an iterative review at the end of one or more phases of the project life cycle that states what went well and/or what did not go well, but without reasons for why that was.</p> <p>Carries out a final evaluation at the end of the project that states what went well and/or what did not go well, there will be limited recognition of what changes were made, if any, during the project.</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 will lack detail about what went well and what did not with reasons for why that was. Resolutions and adaptations are described and some are explained although they are not justified.</p> <p>Carries out a final evaluation against their success criteria, identifying if the objectives were met.</p> <p>Evidence of a reflection on the planning phase 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>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 explained and some are justified.</p> <p>Carries out a final evaluation that measures the success of the project against their success criteria.</p> <p>Evaluation 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>

3.16 Glossary of terms used in R012 and R013

Adequate	Satisfactory or acceptable in quality or quantity.
Analyse	Break down in order to bring out the essential elements or structure. To identify parts and relationships, and to interpret information to reach conclusions.
Annotate	Add brief notes to a diagram or graph.
Calculate	Obtain a numerical answer showing the relevant stages in the working.
Compare	Give an account of the similarities and differences between two (or more) items or situations, referring to both (all) of them throughout.
Convert	Change the form, character, or function of something.
Describe	Give a detailed account or picture of a situation, event, pattern or process.
Discuss	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.
Effective	Applies skills appropriately to a task and achieves the desired outcome; successful in producing a desired or intended result.
Efficient	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>	
Evaluate	Assess the implications and limitations; to make judgements about the ideas, works, solutions or methods in relation to selected criteria.
Explain	Give a detailed account including reasons or causes.
Give	Present information which determines the importance of an event or issue. Quite often used to show causation.
How	In what way or manner; by what means.
Identify	Provide an answer from a number of possibilities. Recognise and state briefly a distinguishing factor or feature.
Justify	Give valid reasons or evidence to support an answer or conclusion.
Label	Add title, labels or brief explanation(s) to a diagram or graph.

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

SECTION 4

ADMINISTRATION

4	Administration	52
4.1	<u>Availability of assessment</u>	52
4.2	<u>Equality Act information</u>	52
4.3	<u>Accessibility</u>	52
4.4	<u>Requirements for making an entry</u>	53
4.5	<u>Certification rules</u>	54
4.6	<u>Resits</u>	54
4.7	<u>Post-results services</u>	54



4 Administration

4.1 Availability of assessment

There will be assessment series in every year for both assessment units. See Key dates and timetables on the [OCR website](#) for more information.

Assessment Unit R012, Understanding tools, techniques, methods and processes for technological solutions, is examined. There will be two series every year after the first year.

Assessment Unit R013, Developing technological solutions, is internally assessed and OCR-moderated. There will be two series every year after the first year. Work is produced by following an OCR-set assignment. A new assignment will be set for each series and then withdrawn. The series in which it can be used will be stated on the assignment.

Learners can be entered for R012 and R013 in the same series or in different assessment series.

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

4.2 Equality Act information relating to Cambridge Nationals in Information Technologies

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.

The Cambridge Nationals in Information Technologies qualification was reviewed to identify whether any of the competences required by the subject presented a potential barrier to any disabled learners. If this was the case, the situation was reviewed again to ensure that such competences were included only where essential to the subject.

4.3 Accessibility

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 candidate requires access arrangements in Cambridge Nationals assessments that require awarding body approval, then approval covering Cambridge Nationals must be gained in Access Arrangements Online. Approval from GCSE or GCE applications alone no longer extends to other qualification types. For guidance or support please contact the OCR Special Requirements Team.

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/.

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 this qualification unfairly restricts access and progression, please email or call our Customer Support 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
BSL interpreters	Yes	All assessments
Oral language modifiers	Yes	All assessments
Modified question papers	Yes	Timetabled examinations
Extra time	Yes	All assessments

4.4 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. 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.

4.4.1 Making estimated unit entries

Estimated entries are not required for Cambridge Nationals in Information Technologies.

4.4.2 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 from the table below.

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>
R013A	01	Moderated via OCR Repository	<i>Developing technological solutions</i>
R013B	02	Moderated via postal moderation	

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

You do not need to register your candidates first; individual unit entries should be made for the series in which you intend to submit an internally assessed unit or sit the externally assessed examination.

Only make a certification entry using the overall qualification code (see below) in the final series.

4.5 Certification rules

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.

The certification entry code is J808: OCR Level 1/Level 2 Cambridge National Certificate in Information Technologies.

4.6 Resits

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

Learners may resit the externally assessed Unit R012, **once**.

Learners may resit the internally assessed Unit R013 and they must use a new OCR-set assignment. New assignments are released for each series.

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.

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.

4.7 Post-results services

Under certain circumstances, you may wish to query the result issued to one or more learners. Reviews of results requests for all units must be made immediately following the series in which the relevant unit was taken (by the reviews of results deadline).

Please refer to the [JCQ Post-Results Services booklet](#) and the [OCR Administration](#) page for further guidance about action on the release of results.

For internally assessed units the review of results process cannot be carried out for one individual learner; the outcome of a review of moderation must apply to a centre's entire cohort.

Appendix A: Guidance for the production of electronic evidence for unit R013

Assignment evidence

For Assessment Unit R013 the learner will produce a number of pieces of evidence to form a portfolio of evidence that is stored electronically in a secure area and capable of being submitted to OCR either through the postal moderation route or through the OCR Repository.

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

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.

Centres must ensure that any online applications used during the development of the solution are able to be downloaded and a final version of the documentation can be given to the moderator without the need for online connectivity.

Evidence submitted **should** be electronic and digital documentation or files in the form of planning documentation, spreadsheets/database, presentations, photos, video, audio files, websites/social media, mobile apps, PDFs, word processed documents, desktop publishing.

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.

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 section [Accepted File Formats for the OCR Repository](#) for more information.

Accepted File Formats for Cambridge Nationals (for postal moderation, not for OCR Repository)		
accdb mdb	odg	sxi
avi	odp	sxw
bmp	ods	tga
csv	odt	tif
Doc (docx, docm)	pdf	txt
fla	png	wav
flv	pps	wks
gif	Ppt (pptx, pptm)	wma
jpg	psd	wmf
mov	rar	wmv
mp3	rtf	Xls (xlsx, xlsxm)
mp4	swf	zip
mpeg	sxc	
mpg	sxd	

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, css) 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.

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) (pptx, pptm)
Word (.doc) (docx, docm)
Excel (.xls) (xlsx, xlsm)
Visio (.vsd)
Project (.mpp)
Database software
Access. accdb mdb odb (or equivalent)
Web technologies
Hypertext mark-up language (.html)
Cascading Style Sheets

Appendix B: Summary of key changes

Title of current section/sub-section	Change	Version and date
Throughout	Updated 'Level 1/2' to 'Level 1/Level 2'	Version 5 published September 2019
1.1 Qualification size (GLH and TQT)	Updated title and text.	
1.2 Availability and funding	Section removed.	
3.7.5 Learner and centre declarations	Updated information on the use of Centre authentication forms.	
4.3 Accessibility	Updated title and updated information on approval requirements and permissible access arrangements.	
4.4.1 Making estimated unit entries	Updated information.	
4.4.2 Making final unit entries		
4.7 Post-results services	Updated title and updated text.	
Making final unit entries	Unit entry codes for R013 updated	Version 4 published March 2019
Specification	Restructured following feedback from centres	Version 3 published December 2018
Synoptic assessment	Updated information	
Assessment and grading	R013 series confirmed as January and June each year, following consultation with centres.	Version 2 published December 2017 – changes previously indicated by a blue line
Preparing for qualification delivery and assessment	Additional information relating to the use of JCQ <i>Instructions for Conducting Coursework</i> and resits of OCR-set assignments	
Requirements and guidance for delivering and marking the assignment (R013)	Additional information relating to: <ul style="list-style-type: none"> the use of JCQ <i>Instructions for Conducting Coursework</i> and resits of OCR-set assignments specific guidance on tasks in the OCR-set assignments malpractice 	
At a glance page	Resit requirements for internally assessed units amended: Learners can resit the internally assessed task but must take a new OCR-set assignment.	Version 1 published August 2017 – Changes to specification marked as draft
Learning outcomes, teaching content and delivery guidance	Taxonomy applied to the teaching content.	
Learning Outcome	Teaching content	
1	1.5	
4	4.1 and 4.3	
5	5.1	
6	6.2	
Learning Outcome 7, teaching content 7.2.3	Removed requirement to implement responsive web design	

Assessment structure	A new assignment is released each series and published on the OCR website	
OCR-set assignments	OCR release a new OCR-set assignment for each series.	
Resubmitting work for (summative) assessment before submitting a final mark	Change to heading title to include 'before submitting a final mark' If after moderation the learner wants to improve their marks they must take a new OCR-set assignment.	
Assessment availability	A new assignment will be set for each series and then withdrawn.	
Resits	Learners must take a new assignment. A new assignment is released for a specified series.	



**Cambridge
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