Common questions about National 3, National 4, National 5, Higher and Advanced Higher Computing Science

General

What software should we use for Computing Science courses?

SQA does not recommend any software; however, we do give a list of requirements needed to complete the tasks in the course. It is the centre's responsibility to ensure that the software used meets these requirements.

The most popular programming languages in schools and colleges are Python, Visual Basic, LiveCode and Java. Python is the most common.

Are the solutions in the published marking instructions the only answers that are acceptable?

No, the published marking instructions are not exhaustive. They are designed to give markers the flexibility to use their professional judgement and give credit for other acceptable answers not explicitly covered in the marking instructions.

Are marks focused on the course content of the level being assessed?

Yes. Marks focus on the content and coding constructs for that level, as outlined in the course specification. However, each level requires under-pinning knowledge from the lower level. This under-pinning knowledge may be assessed but only within the context of a question and/or problem at the level being assessed. For example, loops and equi-joins are National 5 concepts that could be allocated a mark in a solution to a Higher problem.

What happens if a candidate answers both options in the assignment or question paper?

Markers are instructed to mark all questions that the candidate has answered. Our e-marking platform then determines which option has the best mark and includes this in the total mark.

Does a candidate have to complete the same option in both their assignment and question paper?

No. Candidates can complete different options for each component if they wish to.

Software design and development

Does the question paper only use the standards algorithms specified in the course specifications?

Although questions focus on the standard algorithms stated in the course specification for each level, questions may also use other code appropriate to the level.

What's the difference between questions that ask candidates to write code and questions that ask them to design solutions?

Candidates are asked to write code using a programming language of their choice or asked to design a solution using a design technique of their choice.

If candidates are asked to write code, marks are awarded, regardless of minor syntax errors, as long as the intention of the coding is clear. This is in line with the general marking principles.

If candidates are asked to design solutions, marks are awarded as long as the intention of the design is clear. If candidates write their response in pseudocode, or a hybrid of pseudocode and code, marks are awarded to the constructs in line with the marking instructions.

Do candidates need to know what the different symbols mean in the graphical design techniques?

Yes. The question paper and assignment tasks use the symbols we've identified in the appendices and candidates must be able to read and understand design techniques. However, if candidates are asked to produce a design, the marking will focus on solving of the problem rather than correctly using the symbols.

Can functions be used to provide solutions to standard algorithm problems?

Candidates are expected to be able to code and adapt the standard algorithms. If candidates use built-in features of the programming language, for example the functions max (), min (), they would fail to demonstrate their ability to code these algorithms.

We expect candidates to know and have used the predefined functions that are listed in the course specification in their preferred programming language.

How can I cover ‘array of records’ in Python?

Python has several data structures that can be used to simulate an array of records. For example:

- dataclass
- list of tuples
- dictionary objects
- simple class objects

Of these, dataclass, a simplified object implementation is the closest to a record type data structure.

It is important that candidates understand the terminology of records and arrays, as this terminology is used in assessment. Showing examples of SQA reference language is a good way of delivering this.

National 5 and Higher assignments

Can we use an online integrated development environment (IDE) for the National 5 and Higher assignments?

Yes. However, the online IDE must have a facility that prevents candidates accessing their files and tasks outside the supervised classroom environment.

Can I give practice tasks to candidates?

Yes. We anticipate that you might use specimen tasks and tasks from previous years as practice tasks, either to prepare for assessment or as part of learning and teaching. You can also devise your own tasks for these purposes. However, you must not create and use practice tasks with the specific purpose of developing code that, with minor modifications, could provide a solution to the current year’s assignment.

Can I give candidates a template for their code?

Yes. However templates must only contain general starter code used in learning and teaching (for example, a web page that contains the html, title and body elements) — templates must not be tailored to that year’s task.

If I’m not clear about the requirements of the task, can I ask SQA to clarify?

SQA cannot provide clarification to teachers and lecturers on any aspects of the task. This ensures that all candidates are given the same instructions. This approach also allows us to take account of any misinterpretations and/or different approaches in a fair and consistent way.

We do this during the marking process, by considering any issues in the finalised marking instructions. Markers are trained using different candidate responses, where a variety of approaches were taken. This ensures that markers are marking to the principles set out in the marking instructions, and not one single, expected response.

At the end of the marking process, if qualitative and quantitative evidence indicates that the task did not function as intended (either being of greater or lesser demand), we take this into account when setting the grade boundaries.

This approach is dependent on consistency in the assessment task, and how it is marked.

Units

Are the National 5, Higher and Advanced Higher units still available?

Yes. The Software Design and Development and Information Systems Design and Development units (previously part of the courses) are still available as free-standing units at SCQF levels 5, 6 and 7. There is no requirement to deliver these units as part of the current courses.

Do the thresholds for assessment standards in units still apply?

Yes. You can find the thresholds in the unit specifications.

When using SQA's unit assessment support packs, must we use the tasks exactly as they are, or can we change them in any way?

You are free to adapt any of our unit assessment support packs as you see fit or use an assessment of your own creation.

However, if you make substantial changes to an SQA unit assessment, or create your own, we recommend submitting the assessment for prior verification to ensure that it is suitable and meets the assessment standards.

SQA reference language

What is SQA reference language?

SQA does not specify which programming language to use for its qualifications, but we do need to assess a candidate's ability to read, understand and explain code.

Therefore, we asked colleagues in the higher education sector to develop a standardised way of presenting code in question papers. This language is used for National 5, Higher and Advanced Higher question papers and is known as SQA reference language.

You can find more information on the reference language in the 'Course support' section on SQA's subject pages for each level.

Do I have to teach candidates to write programs using SQA reference language?

No. However, you should ensure that candidates are able to identify how course constructs are presented in SQA reference language, compared to the language they have been working with. This should be covered as part of preparation for the question paper, once you have taught the course content.

Is SQA reference language pseudocode?

No. The language is a formally-defined, executable language. This language is required, as in some questions we assess a candidate's ability to read and understand program code.

Can candidates use SQA reference language as a design technique?

SQA reference language is a formally-defined language and not pseudocode, so it is not suitable to use in the design stage of software development. However, the marking instructions focus on the general concepts and constructs required in the design of a solution. If a candidate provides their answer using a programming language (including SQA reference language), or a mix of pseudocode and code, marking still focuses on the constructs set out in the marking instructions.

Estimates and prelims

Should estimates include consideration of coursework?

You must consider coursework when generating estimates; however, this should not be in the form of a mark based on live coursework material.

For National 5 and Higher, the assignments are annually issued and externally marked. At the time of estimating, no marking instructions are available to assess live assignment evidence.

For Advanced Higher, the project marking instructions are available, but there is no requirement for you to mark the live projects.

You should judge evidence candidates generate during class tasks or assignment practice. This evidence must demonstrate the practical skills, coding and problem solving that are assessed in the coursework. For National 5 and Higher, evidence doesn’t need to be in the form of a 40-mark task or for Advanced Higher, an 80-mark task. You should make a holistic professional judgement on this evidence, and consider it at the appropriate weighting, along with the question paper evidence, to arrive at your final estimate.

What resources are there to help me develop my own question paper prelim?

A good prelim paper should:

- reflect the structure and weighting of the SQA paper
- ensure appropriate sampling of the course content
- have an appropriate balance of A and C marks

The following SQA materials will help you with this:

- **Course specification** — in the 'Course assessment' section of the course specification, we set out the structure and weighting of the SQA paper for each level.
- **Question paper brief** — in the 'Course support notes' section of the course specification, we set out how course content is sampled in the paper.
- **'Identifying A/C marks' audio presentations** — information on how our question papers differentiate between candidates, with questions that are defined as 'C mark' or 'A mark'. You can find these presentations in the 'Course support' section on the subject pages for each level.
- **Past papers and marking instructions** — a bank of questions that can be used as they are or adapted. If using past paper questions, you should aim to use questions from multiple sources to create a valid, unseen paper. Our 'Past exam questions' documents will help you to identify questions for each area of the course. You can find these in the 'Course support' section on the subject pages for each level.

Can I use commercial papers for prelims?

Yes. Commercial papers are likely to be available for all levels of Computing Science National Courses. If using these, you should ensure that they meet all the requirements above.

You will find general questions and answers about National Qualifications on our website at www.sqa.org.uk/faq.