

AQA **AS Level** Computer Science

Specification at a glance

Paper 1

On-screen exam: 1 hours 45 minutes
50% of AS

What's assessed:

This paper tests a student's ability to program, as well as their theoretical knowledge of Computer Science from subject content 1-4 below.

Questions:

Students answer a series of short questions and write/adapt/extend programs in an Electronic Answer Document provided by AQA.

AQA will issue Preliminary Material, a Skeleton Program (available in each of the Programming Languages) and, where appropriate, test data, for use in the exam.

- **1 Fundamentals of programming**
 - **Programming**
 - **Data types**
 - **Programming concepts**
 - **Arithmetic operations in a programming language**
 - **Relational operations in a programming language**
 - **Boolean operations in a programming language**
 - **Constants and variables in a programming language**
 - **String-handling operations in a programming language**
 - **Random number generation in a programming language**
 - **Exception handling**
 - **Subroutines (procedures/functions)**
 - **Parameters of subroutines**
 - **Returning a value/values from a subroutine**
 - **Local variables in subroutines**
 - **Global variables in a programming language**
 - **Procedural-oriented programming**
 - **Structured programming**
- **2 Fundamentals of data structures**
 - **Data structures and abstract data types**
 - **Single- and multi-dimensional arrays (or equivalent)**
 - **Fields, records and files**
- **3 Systematic approach to problem solving**
 - **Aspects of software development**
 - **Analysis**
 - **Design**
 - **Implementation**
 - **Testing**
 - **Evaluation**

- **4 Theory of computation**
 - **Abstraction and automation**
 - **Problem-solving**
 - **Following and writing algorithms**
 - **Abstraction**
 - **Information hiding**
 - **Procedural abstraction**
 - **Functional abstraction**
 - **Data abstraction**
 - **Problem abstraction/reduction**
 - **Decomposition**
 - **Composition**
 - **Automation**
 - **Finite state machines (FSMs) without output**

Paper 2

Written exam: 1 hours 30 minutes
50% of AS

What's assessed:

This paper tests a student's ability to answer questions from subject content 5-9 below.

Questions:

Compulsory short-answer and extended-answer questions.

- **5 Fundamentals of data representation**
 - **Number systems**
 - **Number bases**
 - **Units of information**
 - **Binary number system**
 - **Information coding systems**
 - **Representing images, sound and other data**
- **6 Fundamentals of computer systems**
 - **Hardware and software**
 - **Relationship between hardware and software**
 - **Classification of software**
 - **System software**
 - **Role of an operating system (OS)**
 - **Classification of programming languages**
 - **Types of program translator**
 - **Logic gates**
 - **Boolean algebra**
- **7 Fundamentals of computer organisation and architecture**
 - **Internal hardware components of a computer**
 - **The stored program concept**
 - **Structure and role of the processor and its components**
 - **The processor and its components**
 - **The Fetch-Execute cycle and the role of registers within it**
 - **The processor instruction set**
 - **Addressing modes**
 - **Machine-code/assembly language operations**
 - **Interrupts**

- **Factors affecting processor performance**
- **External hardware devices**
 - **Input and output devices**
 - **Secondary storage devices**
- **8 Consequences of uses of computing**
 - **Individual (moral), social (ethical), legal and cultural issues and opportunities**
- **9 Fundamentals of communication and networking**
 - **Communication methods**
 - **Communication basics**
 - **Network topology**
 - **Types of networking between hosts**
 - **Wireless networking**

Full Specification PDF:

<http://filestore.aqa.org.uk/resources/computing/specifications/AQA-7516-7517-SP-2015.PDF>

In order to improve your Python skills consider buying

“Learning to Program in Python” book. Here is the link:

<https://amzn.to/2Ktt0PW>

You should also practice some Python exercises. Here are a couple of good websites.

<http://www.practicepython.org/>

<https://snakify.org/>

<https://www.tutorialspoint.com/python/index.htm>

PG Online AQA AS and A Level Computer Science textbook

<https://amzn.to/2yNJv4X>