3.2 Programming Knowledge Organiser

Control flow
- Sequence
- Logical Operators
- Selection
  - IF… ELSE…
- Iteration
  - For
  - While

Interpreting Algorithms
- Dry Runs
- Trace Tables
- Identifying Errors

Searching & Sorting
Describe how each of the following work and how to implement them, and advantages & disadvantages of each.
- Linear Search
- Binary Search
- Bubble Sort
- Merge Sort

SENECA

Use SENECA to help revise and answer questions on these topics

Data types
- Integer *e.g. 23*
- Real (Float) *e.g. 23.7*
- Character *e.g. A or 5*
- String *e.g. A546TH*
- Boolean *e.g. TRUE or FALSE.*

Mathematical Operators
- ADD +
- SUBTRACT –
- DIVIDE /
- MULTIPLY *
- MOD
- DIV
- EXP

Order of Operations: BIDMAS

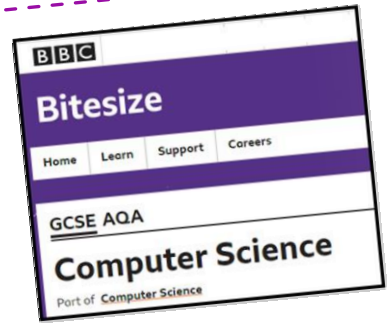
Data structures
- Arrays;
  - Examples
  - 2D Arrays
  - Indexes

String Manipulation
- Concatenation
- String Indexes
- Escape Sequences

Variables & constants
- Named storage location reserved in memory.
- Both declared.
- Definition of variable.
- Definition of constant.

Testing
- Test data should be chosen to cover valid, invalid, extreme & erroneous situations.
- Logic errors
  - Definition & examples.
- Syntax errors
  - Definition & examples.

Subprograms
- Advantages
- Types;
  - Function
  - Procedure
  - Parameter Passing



FAQ's

Do I need to write program code in the exam?

Yes, there may be an opportunity to write python code in the exam. So practice this by not using a computer. Write it out on paper and then test it on the computer.

Misconceptions

The NEA covers a lot of this area of the course, however Paper 1 questions focus on the knowledge behind this. Can you do it away from the computer. You might be a whizz in Python, but can you explain it, describe it in an exam?

3.2 Programming

Students need a **theoretical understanding** of all the topics in this section for the paper 1 exam even if the programming language(s) taught does not support all of the topics. Exams will always present algorithms using the current version of the AQA pseudo-code. The document can be found on the AQA website.

Students need a **practical understanding** of all the topics and skills in this section for the paper 1 exam. When they are writing computer programs in an exam they will need to ensure they use meaningful identifier names, use suitable data types and that all logic flow is clearly identifiable to examiners.

Exam questions will explicitly state in what form the response needs to be provided. This will be, for example, pseudo-code, program code or a flowchart, and students must respond as instructed. Where pseudo-code is an accepted method of response, students may present their answers to questions in any suitable format and do not need to use the AQA pseudo-code.