# KESTEVEN AND SLEAFORD HIGH SCHOOL

# Computer Science Scheme of Learning

# Year 10 – Term 2

### Intent – Rationale

This term focuses on algorithm design and programming fundamentals, including the use of flowcharts and pseudo code, basic programming constructs and data types

| Sequencing – what prior learning does this topic build upon? | Sequencing – what subsequent learning does this topic feed into? |
|---|---|
| • Year 8 Topic 3<br>• Year 9 Topic 3 | • A-Level Computer Science Programming |

| What are the links with other subjects in the curriculum? | What are the links to SMSC, British Values and Careers? |
|---|---|
| • N/A | • GB4e, GB4f |

| What are the opportunities for developing literacy skills and developing learner confidence and enjoyment in reading? | What are the opportunities for developing mathematical skills? |
|---|---|
| • Python Programming (Third Edition) (For the Absolute Beginner) by Mike Dawson | • N/A |

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## Computer Science Scheme of Learning

## Year 10 – Term 2

### Intent – Concepts

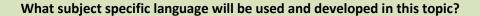| What knowledge will students gain and what skills will they develop as a consequence of this topic? |
|---|

**Know**

- **Principles of computational thinking**: abstraction, decomposition, algorithmic thinking
- **Designing, creating and refining algorithms:** identify the inputs, processes, and outputs for a problem, structure diagrams, create, interpret, correct, complete, and refine algorithms using: pseudo code, flowcharts, reference language/high-level programming language, identify common errors and trace tables
- **Programming fundamentals**: the use of variables, constants, operators, inputs, outputs and, assignments, the use of the three basic programming constructs used to control the flow of a program:  sequence, selection and  iteration (count- and condition-controlled loops), the common arithmetic operators the common Boolean operators and, or and not
- **The use of data types:** integer real Boolean character and string casting

**Apply**

- Be able to describe how computational thinking can be used to solve complex problems
- Be able to understand, create and correct flowcharts and pseudo code to represent an algorithm
- Be able to design and create coded solutions making use of the basic programming constructs

**Extend**

- Develop their programming skills further by researching and using a wider range of data types (list, tuple, dictionary, etc.) and the use of library functions

| What subject specific language will be used and developed in this topic? | What opportunities are available for assessing the progress of stu |
|---|---|

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|---|---|
| <ul><li>Abstraction</li><li>Decomposition</li><li>Algorithmic</li><li>Pseudo Code</li><li>Flowcharts</li><li>Sequence</li><li>Selection</li><li>Iteration</li><li>Integer</li><li>Real</li><li>Boolean</li><li>Character</li><li>String</li><li>Casting</li></ul> | <ul><li>Class Notes and in-lesson observation</li><li>Kahoot starters/plenaries and verbal questioning</li></ul> |

## Intent – Concepts

| Lesson title | Learning challenge | Higher level challenge | Suggested activities and resources |
|---|---|---|---|
| | | | See P drive for lesson presentations/resources |
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