Computing Progression Pathways

**Pupil Progression**

### Algorithms
- Understands what an algorithm is and is able to express simple (non-branching) linear algorithms.
- Understands that algorithms are essentially programs, and can describe this by creating simple algorithms in words or using pictures.
- Demonstrates care and precision to avoid errors. (AL)

### Programming & Development
- Knows that users can develop their own programs, and can demonstrate this by creating simple programs that accomplish a specific task.
- Understands that programs can work with different types of data.
- Detects and corrects simple errors. (AL)

### Data & Data Representation
- Recognises that digital data can be represented in many forms (AB).
- Identifies the features of a program that can explain the different ways that they communicate information. (AB)

### Hardware & Processing
- Understands that computers have no intelligence and that computers do not do the things that humans do unless a program is executed. (AL)
- Recognises that a range of digital devices can be considered a computer. (AL)
- Recognises and can use a range of input devices such as keyboards and external media.
- Understands how programs specify the use of a general purpose computer. (AB)

### Communication & Networks
- Navigates the web and can carry out simple web searches to solve a problem. (AL)
- Understands the difference between the internet and internet service. (AL)

### Information Technology
- Understands the relationship between binary and file size (uncompressed). (AL)
- Knows why sorting data in a flat file can improve search results. (AL)
- Knows the purpose of the internet and how it is used. (AL)
- Knows the difference between hardware and application software, and their roles within a computer. (AL)
- Knows that computer collect data from various input devices, including sensors and application software. (AL)

### Computing Thinking Concept:
- Coding.
- Computational Thinking.
- Algorithms.
- Logical reasoning.
- Problem solving.
- Programming.
- Declarative knowledge.
- Representational knowledge.
- Computational Thinking.
- Problem solving.
- Programming.
- Declarative knowledge.
- Representational knowledge.
- Data structures.
- Algorithms.
- Logical reasoning.
- Problem solving.
- Programming.
- Declarative knowledge.
- Representational knowledge.
- Data structures.

### Computational Thinking Mapping
- Uses software under the control of the user to create, store and edit digital content using appropriate file structure and file management techniques. (AL)
- Understands that people interact with computers through user interfaces, and the need for keeping personal information private. (EV)
- Knows common uses of information technology beyond school and beyond the classroom. (EV)
- Talks about their work and makes improvements to solutions based on feedback received. (EV)

### Computing Progression Pathways
- Collects, organises and presents data and information in digital form. (AL)
- Creatively designs and creates digital artefacts for a wider or remote audience. (AL)
- Effectively designs and creates digital artefacts for a wider or remote audience. (AL)
- Effectively designs and creates digital artefacts for a wider or remote audience. (AL)

### Note:
Each of the Progression Pathway statements is underpinned by one or more learning outcomes (due for publication in 2016), providing greater detail of what should be taught to achieve each Progression Pathway statement and National Curriculum point of study. © 2014 Mark Dorling and Matthew Walker. Reviewed by Simon Humphrey and Sue Sentence of Computing At School, CAS Master Teachers, and by teachers and educators from the wider CAS community. Computational thinking mapping undertaken by Mark Dorling, Cynthia Selby and John Woolard.