

## Computing

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Computing is a rigorous academic subject which has links with the disciplines of mathematics, science and engineering. A high-quality computing education equips pupils to use computational thinking to become creators of digital technologies, digital artefacts and computing knowledge.

Across all key stages, computing progression can be categorised in the following categories:

- **Computer science (CS) - Problem solving and logical thinking**
- **Information technology (IT) - Creative content**
- **Digital literacy (DL) - Digital Literacy including Online Safety**

### **Substantive knowledge**

#### **Computer science**

Computer science is the core of the computing curriculum and covers principles such as data representation, algorithms, data structures and programming. This provides the foundation knowledge required to understand and interpret other areas of the curriculum.

#### **Information technology**

Information technology provides a context for the use of computers within society. Within IT there is a focus on knowledge of how computers are used within different sectors and describes the methods to create digital artefacts such as videos, animations or 3D models.

#### **Digital literacy**

Digital literacy is the knowledge and ability to use technology confidently, competently and in a safe way. It covers wide-ranging knowledge from how to operate devices at a mechanical level, searching and selecting information and how to use digital devices safely and responsibly.

### **Disciplinary knowledge - development of computational thinking.**

Computational thinking is a domain-specific approach to solving problems and applies to a range of methods used within the discipline by experts.

- Decomposition is the process of breaking down larger problems into smaller solvable sub-problems.
- Abstraction is the process of removing unimportant details when thinking about a problem or a system.

The curriculum should allow pupils to develop their capacity to think computationally through repeated practice with carefully selected known and unknown problems. This will be underpinned by secure pre-requisite component knowledge. Pupils should have the opportunity to implement solutions through practical programming.

### **Pupils get to consider where computing sits within the wider world, its history and its impact.**

Subjects will plan for opportunities for pupils to think about the disciplinary qualities of computing. They will consider the history of computing, of which there is a rich British history. Pupils will be encouraged to debate the nature of the subject and its impact in their community and in the wider world, both in existing and emerging technologies such as AI, robotics, data science and digital privacy. This debate will be supported by secure subject knowledge so that pupils can engage in argument about