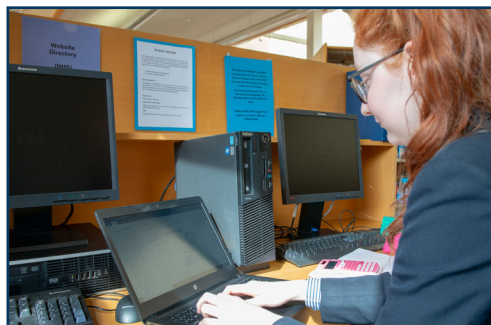# Computing

Computing is becoming more relevant year on year in a fast-paced world where technology permeates almost every aspect of our lives. A constantly-evolving Computing curriculum at Northampton High School helps to prepare pupils to make the most of the almost limitless opportunities that this exciting area offers.

Key Stage 3

All Key Stage 3 students and any Key Stage 4students who have opted to study Computer Science at GCSE take part in the Bebras Computational Thinking Skills Challenge. We have had much success in this competition with many students progressing to the TCS Oxford Computing Challenge. They also have the opportunity to take their coding skills to the next level by joining the Coding Club, which focuses on developing games using Python, C# or HTML, CSS and JavaScript.

At Key Stage 3, pupils consolidate their knowledge of the Scratch programming environment, using it to build their logical thinking skills and their ability to plan complex programs. Students then develop these skills further by learning how to code in Python, using some of the language's modules to develop graphics, create games and analyse data. They explore the theme of online security by learning about encryption and the vulnerabilities of computer systems.

The potential of physical computing is introduced by experimenting with the BBC micro:bit and Raspberry Pi along with various components and sensors.

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Key Stage 4

The topics covered in Computing GCSE are wide-ranging and beneficial for developing an understanding of technology and its impact in our world and society.

We investigate the structure and architecture of computer systems, gaining an understanding of how data is represented, stored and manipulated. Computational and logical thinking skills are developed by studying algorithms and problem solving.

Technological advancement raises many ethical questions, so we explore some of the hot topics of the day, discussing the variety of ways people have responded to these opportunities and threats. The current relevant legislation regarding data is introduced and we explore whether it is fit for purpose in a 'big data' culture. Students learn how to create their own solutions to computational problems using the Python programming language.

They start by solving small, incremental challenges, building to a final programming project at the start of Year 11.
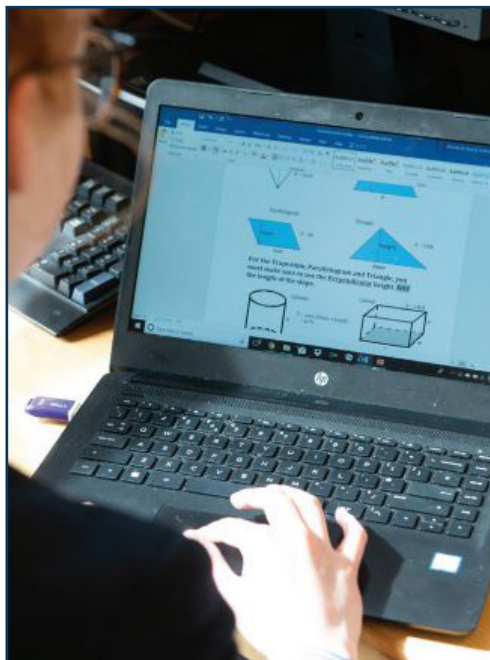
"I've really enjoyed doing Computing GCSE. It has taught me lots of useful skills such as problem solving and how to avoid malware and scams. It is also a very practical, hands-on subject which I find really enjoyable."
– Daisy, Year 10

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