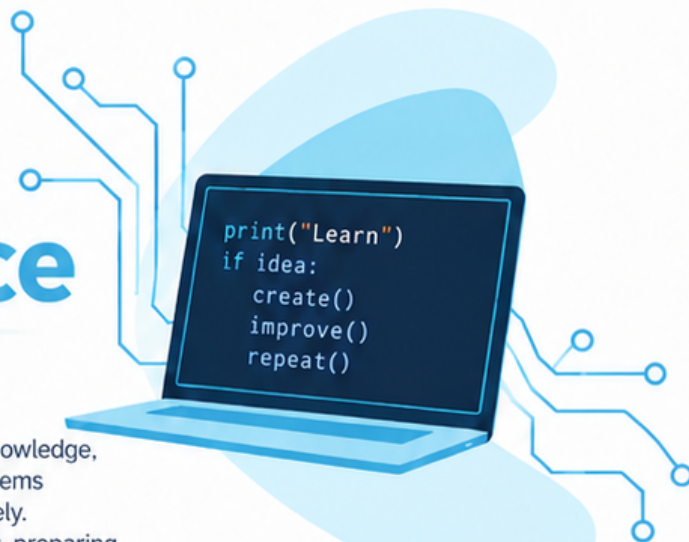




Year 8 Computer Science

CURRICULUM OVERVIEW

In Year 8, students build on the foundations from Year 7, developing their knowledge, skills and understanding of how computer systems work, how to solve problems computationally and how to use technology safely, responsibly and creatively. The curriculum develops both theoretical understanding and practical skills, preparing students for further study at GCSE and beyond.



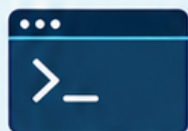
1 Operating Systems



How computers work for different users.

- What is an operating system?
- Exploring different operating systems (e.g. Windows, macOS, Linux)
- Open source vs proprietary software
- Graphical user interfaces (GUIs)
- How different users have different needs
- Presenting recommendations for users

2 The Command Line



Working with files using text commands.

- File management (create, move, rename, copy, delete, zip)
- File extensions and file types
- Common command line commands
- GUI vs command line – advantages and disadvantages
- When to use each approach

3 Binary



How computers represent data using binary.

- Base 2 and base 10 number systems
- Binary place values
- Adding binary numbers
- Binary shifts and overflow
- Converting between denary, binary and hexadecimal

4 Instruction Set Design



How computers and robots follow instructions.

- What a computer can sense (e.g. light, movement, sound)
- Designing and testing an instruction set
- Efficiency and reducing the number of commands
- Using variables to count
- ASCII and Unicode
- Solving problems using algorithms and computational thinking

5 FlowOL



Using flowcharts to solve problems.

- The importance of sequencing
- Flowchart symbols
- Breaking down problems
- Using selection and iteration (repetition)
- Reusing and simplifying instructions
- Turning flowcharts into working solutions

6 Sorted



Organising and sorting data efficiently.

- Why we sort data
- Ascending and descending order
- Bubble sort
- Selection sort
- Comparing different sorting methods
- Real-world applications of sorting

7 E-safety



Staying safe and responsible online.

- Advantages and disadvantages of email
- Recognising genuine and trusted websites
- Malware, viruses, ransomware and hacking
- Phishing and online threats
- Why hackers hack
- How to stay safe and report concerns

8 Python Next Steps



Building on your Python programming skills.

- Printing output and taking input
- Variables and data types
- Mathematical operators
- Selection (if, elif, else)
- More than two outcomes
- Solving larger problems
- Writing and testing more complex programs

8 Spreadsheets



Working with data to solve real-world problems.

- Formulas and functions
- Cell references and formatting
- Using mathematical operators
- Rows, columns and adding data
- Profit and financial calculations
- Functions (SUM, MAX, MIN, AVERAGE, IF)
- Creating charts and graphs
- Choosing the right chart for your data



Developing Key Skills

Problem solving | Logical thinking
Creativity | Resilience | Digital literacy
Collaboration | Independent learning



Wider Opportunities

Girls into Computing
Women in Technology (American Express)
GCHQ CyberFirst Challenges for Girls
iDEA Digital Awards
Competitions and enrichment activities



Assessment

A range of low-stakes quizzes, practical tasks and end-of-unit assessments are used to check understanding and support progress.



Where Next?

Year 8 builds the knowledge and skills needed for Year 9, GCSE Computer Science and beyond, opening doors to a wide range of future careers in technology.