GCSE

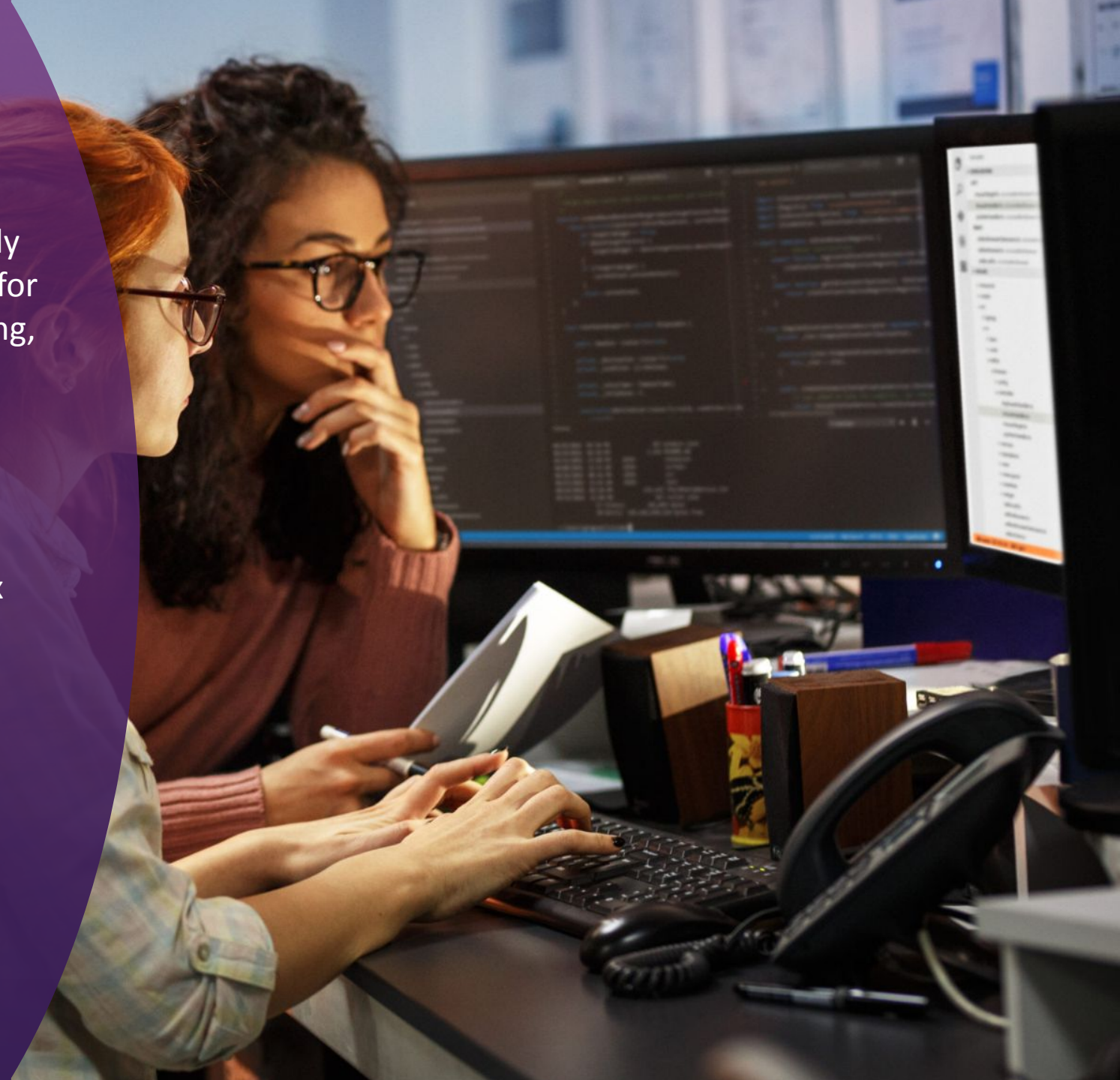
Computer science

NORTHAMPTON SCHOOL FOR GIRLS

What is Computer Science

- **GCSE Computer Science** equips students with computational thinking, programming, and problem-solving skills essential for further study and careers in technology. It lays a foundation for A-Level Computer Science, software engineering, and cybersecurity.

- You will develop skills in:
  - **Programming**: **Writing, debugging, and optimising code.**
  - **Problem-Solving:** Breaking down complex tasks logically.
  - **Data & Systems:** Understanding how computers store and process data.
  - **Networking & Security:** Learning data transmission and protection.
- This could lead to careers in:
  - **Tech Careers:** Software Development, Cybersecurity, AI, Game Development.
  - **Other Fields:** Finance, Healthcare, Retail, Business Analytics



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Course Overview and structure.

Paper 1: Computer Systems (J277/01))

- **Assessment type:** Written examination
- **Duration:** 1 hour 30 minutes
- **Weighting:** 50% of the qualification (80 marks)

Paper 2: Computational Thinking, Algorithms & Programming (J277/02)

- **Assessment type:** Written examination
- **Duration:** 1 hour 30 minutes
- **Weighting:** 50% of the qualification (80 marks)

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Assessment

Computer Science is a GCSE Award and is graded from 1-9.

Assessment Objectives (AO):

1. **AO1 – Demonstrate knowledge and understanding of the key concepts and principles of Computer Science.**

2. **AO2 – Apply knowledge and understanding of key concepts and principles of Computer Science.**

3. **AO3 – Analyse problems in computational terms:**
   - **to make reasoned judgements**
   - **to design, program, evaluate and refine solutions.**

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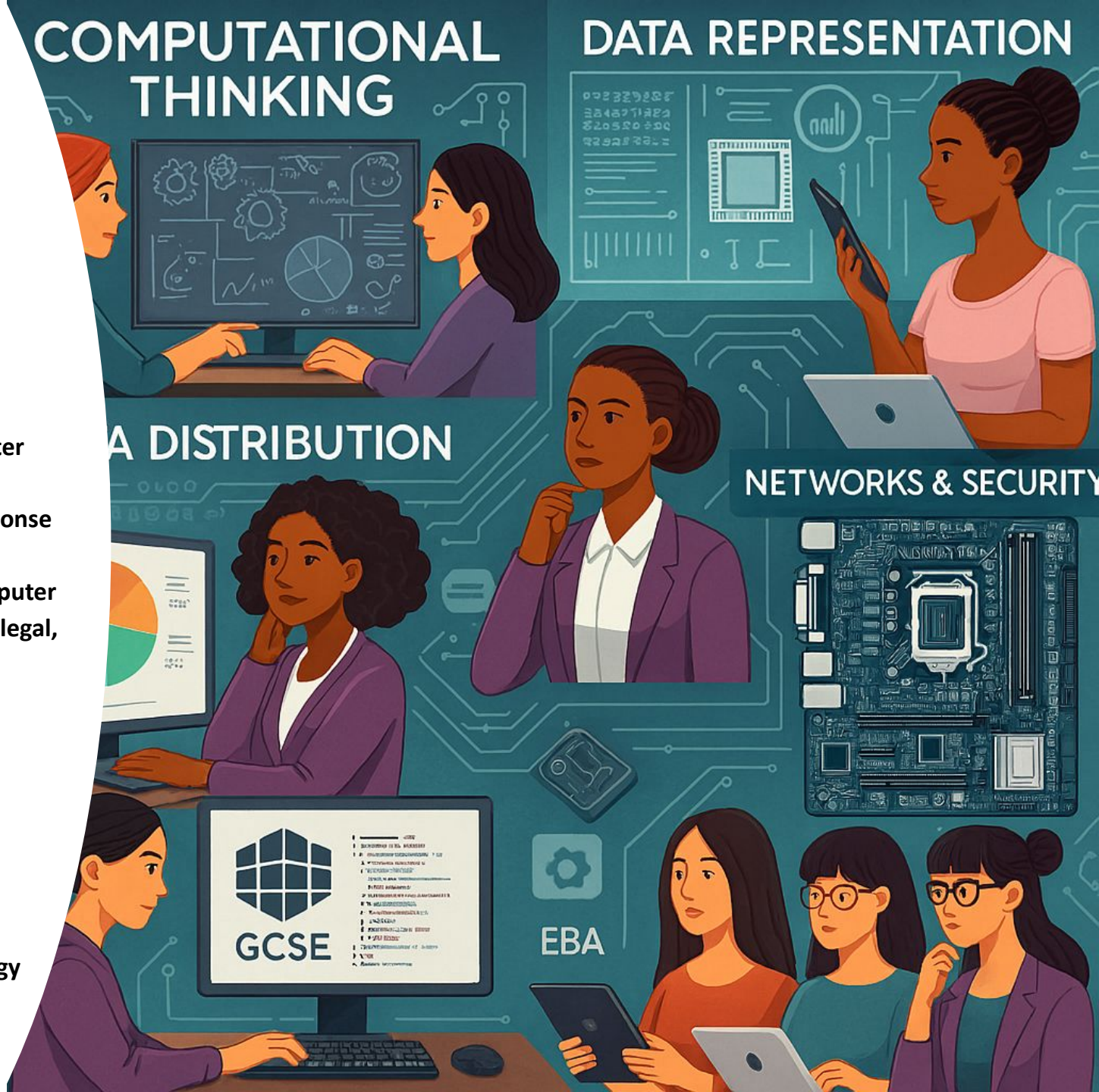
Paper 1: Computer Science (J277)

- **Assessment type: Written examination**
- **Duration: 1 hour 30 minutes**
- **Weighting: 50% of the qualification (80 marks)**
- **Nature of the unit:**
  - **Assesses theoretical knowledge and understanding of computer science principles.**
  - **Includes multiple-choice, short-, medium-, and extended-response questions.**
  - **Focuses on computational thinking, data representation, computer hardware/software, networks, cybersecurity, and the ethical, legal, and environmental impact of digital technology.**

Topics Covered:

1. **Systems architecture**
2. **Memory and storage**
3. **Computer networks, connections and protocols**
4. **Network security**
5. **Systems software**
6. **Ethical, legal, cultural and environmental impacts of digital technology**



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Paper 2: Computational Thinking, Algorithms & Programming (J277/02)

- **Assessment type: Written examination**
- **Duration: 1 hour 30 minutes**
- **Weighting: 50% of the qualification (80 marks)**
- **Nature of the unit:**
  - **Practical coding challenges**
  - **Assesses problem-solving skills, algorithm design, and programming proficiency.**
  - **Students write, test, debug, and refine code using both low level and high level languages.**
  - **Use of Boolean logic to interpret and design logic circuits.**

Topics covered:

1. **Algorithms**
2. **Programming fundamentals**
3. **Producing robust programs**
4. **Boolean logic**
5. **Programing languages and Integrated Development Environments.**

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Key Career Skills

- **Problem-Solving:** Applying logical thinking to break down complex problems.
- **Critical Thinking:** Analysing situations and making data-driven decisions.
- **Attention to Detail:** Debugging and troubleshooting code effectively.
- **Creativity & Innovation:** Designing new solutions and improving existing systems.
- **Collaboration & Communication:** Working with others in teams to develop software or analyse data.

Future career opportunities

Studying **Computer Science** can lead to a career in:

- **Software Development & Engineering**
- **Cybersecurity**
- **Artificial Intelligence & Data Science**
- **Game Development**
- **Network Engineering**
- **IT Support & Systems Administration**
- **Finance & Business Analytics**

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Future study opportunities

Studying **Computer Science** can lead to further study in;

- Any relevant subject at Level 3 (A level), for example at **NSG** we offer:
  - **Computer Science**
  - **Physics**
  - **Mathematics** or **Further Maths**
  - **Business studies**

- Other subjects, such as;
  - **Computing subjects,** such as **web design** and **computer science.**
  - **Design subjects,** such as **graphic or textile design** or **illustration**.

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