

Computer Science - Summer Work

1. Computer Systems: Hardware and Software

 Activity: Create a Poster for Your Computer Science Classroom

Choose to focus on either:

- The difference between hardware and software, or
- The role of system software in managing the computer system

Your poster should:

- Define key terms such as hardware, software, operating system, and utility programs
- Describe how software interacts with hardware
- Give real-life examples of each type
- Include diagrams or illustrations

Use this Isaac CS link to guide your research:

https://isaacomputerscience.org/topics/compsci_hardware_software?examBoard=ocr&stage=gcse

2. Algorithms and Programming

 Task: Explain a Real-World Algorithm


Choose a simple algorithm like binary search, linear search, or bubble sort and:

- Write a short article (half a page) explaining:
 - What the algorithm does
 - When it's useful
 - How efficient it is (mention Big-O where relevant)
 - A step-by-step example

Use:

https://isaacomputerscience.org/topics/compsci_algorithms?examBoard=ocr&stage=gcse


3. Logic and Boolean Algebra

-  Creative Challenge: Build a Logic Gate Puzzle
- Design a logic puzzle using AND, OR, NOT gates
 - Create a truth table to show all possible outcomes
 - Write a paragraph explaining how your logic circuit could be used in real life (e.g., security systems)

Use this resource to support you:

https://isaacomputerscience.org/topics/compsci_boolean_logic?examBoard=ocr&stage=gcse

4. Ethical, Legal, Cultural and Environmental Concerns

 Watch and Reflect:

Watch a video or TED Talk (e.g., about AI, data ethics, or cybercrime). Then write a short reflection (200–300 words) addressing:

- What the video was about
- What ethical or legal issues were raised
- Your opinion on how society should deal with this issue

Use the Ethics section of Isaac for ideas:

https://isaacomputerscience.org/topics/compsci_legal_moral_cultural?examBoard=ocr&stage=gcse

5. Independent Enquiry Task

 Your Curious Question

Think about which part of Computer Science you find most intriguing – turn it into a question like:

- "How does facial recognition use machine learning?"
- "Could quantum computing break today's encryption?"

Use reliable sources (e.g., Isaac CS, BBC Bitesize, Computerphile on YouTube) to research and take notes.

Then, write a 1-page answer summarizing what you learned, including:

- Your sources
- Diagrams if helpful
- Any new questions that arose