

## GCSE Computer Science (8520) from 2017

This qualification is linear. Linear means that students will sit all their exams and submit all their non-exam assessment at the end of the course.

### Subject content

1. Fundamentals of algorithms
2. Programming
3. Fundamentals of data representation
4. Computer systems
5. Fundamentals of computer networks
6. Fundamentals of cyber security
7. Ethical, legal and environmental impacts of digital technology on wider society, including issues of privacy
8. Aspects of software development
9. Non-exam assessment

### Assessments

#### **Paper 1: Computational thinking and problem solving**

##### **What's assessed?**

Computational thinking, problem solving, code tracing and applied computing as well as theoretical knowledge of computer science from subject content 1–4 above

##### **How it's assessed**

Written exam set in practically based scenarios: 1 hour 30 minutes

80 marks

40% of GCSE

##### **Questions**

A mix of multiple choice, short answer and longer answer questions assessing a student's practical problem solving and computational thinking skills.

#### **Paper 2: Written assessment**

##### What's assessed

Theoretical knowledge from subject content 3–7 above.

##### How it's assessed

Written exam: 1 hour 30 minutes

80 marks

40% of GCSE

##### Questions

A mix of multiple choice, short answer, longer answer and extended response questions assessing a student's theoretical knowledge.

#### **Non-exam assessment**

##### What's assessed?

The non-exam assessment (NEA) assesses a student's ability to use the knowledge and skills gained through the course to solve a practical programming problem. Students will be expected to follow a systematic approach to problem solving, consistent with the skills described in Section 8 of the subject content above.

##### **How it's assessed**

Report: totalling 20 hours of work

80 marks

20% of GCSE

##### Tasks

The development of a computer program along with the computer programming code itself which has been designed, written and tested by a student to solve a problem. Students will produce an original report outlining this development.

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Year 10: GCSE 9-1 AQA 8520 Computer Science (from 2017)		
Autumn Term	Spring Term	Summer Term
<p><b>Half Term 1</b></p> <p><b>Unit title: 3.4 Computer Systems</b>  <b>Key learning:</b>            3.4.1 Hardware and Software            3.4.2 Boolean Logic            3.4.3 Software Classification            3.4.4 Systems Architecture: CPU            3.4.4 Systems Architecture: Memory</p> <p><b>Key vocabulary:</b>            Hardware, software and computer systems            Boolean logic            Application and system software            Operating systems            Parts of a CPU and Von Neumann architecture            CPU performance            Fetch-Execute cycle</p> <p><b>Key websites to support learning:</b>  <a href="http://www.mrplahe.com">www.mrplahe.com</a>  <a href="http://www.teach-ict.com">www.teach-ict.com</a>  <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>	<p><b>Half Term 1</b></p> <p><b>Unit title: : 3.4 Computer Systems</b>  <b>Key learning:</b>            3.4.4 Systems Architecture: Memory</p> <p><b>Key vocabulary:</b>            Types of memory            Secondary storage (including cloud storage)            Embedded systems</p> <p><b>Key websites to support learning:</b>  <a href="http://www.mrplahe.com">www.mrplahe.com</a>  <a href="http://www.teach-ict.com">www.teach-ict.com</a>  <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>	<p><b>Half Term 1</b></p> <p><b>Unit title: 3.2 Programming</b>  <b>Key learning:</b> 3.2.1 - 3.2.6            Programming components</p> <p><b>Key vocabulary:</b>            Data types            Variables and constants            Operators            Sequence, selection, iteration            Data Structures            Arrays &amp; Records</p> <p><b>Key websites to support learning:</b>  <a href="http://www.mrplahe.com">www.mrplahe.com</a>  <a href="http://www.teach-ict.com">www.teach-ict.com</a>  <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>
<p><b>Unit title:</b> 3.2 Programming skills ( one lesson a week throughout the year)</p> <p><b>Key learning:</b> 3.2.1 - 3.2.6 Programming components</p> <p><b>Key websites to support learning:</b>  <a href="http://www.mrplahe.com">www.mrplahe.com</a></p>		

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<p><b>Half Term 2</b> <b>Unit title: 3.1 Fundamentals of algorithms</b></p> <p><b>Key learning:</b> 3.1.1 Representing algorithms 3.1.2 - 3.1.4: Types of algorithms</p> <p><b>Key vocabulary:</b> Computational thinking Flowcharts Pseudocode Algorithm efficiency Searching algorithms Sorting algorithms</p> <p><b>Key websites to support learning:</b> <a href="http://www.mrplahe.com">www.mrplahe.com</a> <a href="http://www.teach-ict.com">www.teach-ict.com</a> <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>	<p><b>Half Term 2</b> <b>Unit title: 3.3 Fundamentals of data representation</b></p> <p><b>Key learning:</b> 3.3.1 - 3.3.4 <b>Representing numbers</b> 3.3.5 - 3.3.7 <b>Creating files</b> 3.3.8 <b>Compression</b></p> <p><b>Key vocabulary:</b> Denary and Binary Hexadecimal Units and prefixes Character sets Images Sound Compression Huffman Encoding Run Length Encoding</p> <p><b>Key websites to support learning:</b> <a href="http://www.mrplahe.com">www.mrplahe.com</a> <a href="http://www.teach-ict.com">www.teach-ict.com</a> <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>	<p><b>Half Term 2</b> <b>Unit title: 3.2 Programming</b></p> <p><b>Key learning: 3.2.7 - 3.2.10 Processes</b> 3.2.11 - 3.2.13 Writing programs</p> <p><b>Key vocabulary:</b> File handling String handling Random number generation Subroutines Structured programming Validation and authentication Programming languages</p> <p><b>Key websites to support learning:</b> <a href="http://www.mrplahe.com">www.mrplahe.com</a> <a href="http://www.teach-ict.com">www.teach-ict.com</a> <a href="http://www.bbc.co.uk/education/subjects/z34k7ty">http://www.bbc.co.uk/education/subjects/z34k7ty</a></p>
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