

KS3 Computer Science Curriculum Overview

Head of Department - Miss Fox

Department teaching staff - Mr Howe

Assessment:

Practical Exam at the end of topic 3. A range of assessment windows take place during each unit in line with The Dean Trust assessment policy. These include Self, Peer, Formative and Summative assessments throughout the year.

Homework:

Homework will be set twice each half term linked to the topic. This will be set via the Bromcom Student portal and be visible on the MCAS app for parents, Homework will be submitted through Google classroom. All homework will be set using these systems and pupils can access it at home with their appropriate log in details.

Other Useful Information:

To consolidate learning in the classroom students are encouraged to develop their Computing knowledge and understanding by completing independent study. This could be completed on various platforms including: www.classroom.google.com, www.bbc.co.uk/education, www.codeacademy.com , www.code.org, www.codecombat.com and www.vle.bromcomcloud.com/

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| Year 7 | KS3 Topic 1: Introduction to Computer Systems (14) | Topic 2: Introduction to physical computing (12) | Topic 3: Introduction to the Internet (10) | E n d o f Y e a r e x a m (3) | Topic 4: Computing enrichment project (3/4) |
| | <i>Knowledge What pupils will know</i> | <i>Knowledge What pupils will know</i> | <i>Knowledge What pupils will know</i> | | <i>Knowledge What pupils will know</i> |
| | <p>Programming</p> <ul style="list-style-type: none"> Sequencing Programming basics (Print, Variables and inputs) <p>Computational thinking</p> <ul style="list-style-type: none"> Algorithms (Written Sequence) <p>Computer systems</p> <ul style="list-style-type: none"> Hardware (Types of computers and hardware) Software (Operating systems and application) <p>Digital artefacts</p> <ul style="list-style-type: none"> Design principles (Layout and colours) Standard tools within software (Resize images, changing colour, adding text and images) <p>Digital literacy</p> <ul style="list-style-type: none"> Online safety (recognising threat online) Cyber security (strong passwords) | <p>Programming</p> <ul style="list-style-type: none"> Sequencing Programming basics (Python libraries (Physical computing)) <p>Computational thinking</p> <ul style="list-style-type: none"> Algorithms (Flowchart Sequence) <p>Computer systems</p> <ul style="list-style-type: none"> Data and Number systems (Binary to Denary / Denary to binary) Data and Number systems (Image representation) <p>Digital artefacts</p> <ul style="list-style-type: none"> Design principles (Planning an image) Standards tools within software (Working with tables and colour fill) <p>Digital literacy</p> <ul style="list-style-type: none"> Emerging and past technology (Micro Bits) | <p>Computational thinking</p> <ul style="list-style-type: none"> Decomposition and Abstraction (the planning of the video) <p>Computer systems</p> <ul style="list-style-type: none"> Computer networks (the internet) Software (Social Media sites) <p>Digital artefacts</p> <ul style="list-style-type: none"> Design principles (Planning an video) Standards tools within software (types of edits within video editing) <p>Digital literacy</p> <ul style="list-style-type: none"> Emerging and past technology (History and future of the internet) Online safety (Social media) | | <p>The application of all knowledge from Y7, within an enrichment project (Last ¼ weeks)</p> <ul style="list-style-type: none"> Programming Computational thinking - Computer systems Digital artefacts Digital literacy |
| | <i>Skill What pupils will be able to do</i> | <i>Skill What pupils will be able to do</i> | <i>Skill What pupils will be able to do</i> | | <i>Skill What pupils will be able to do</i> |
| <p>Programming -</p> <ul style="list-style-type: none"> Predicate code outputs (Print and Variables) Modify code (print, inputs and variables) Create code (using print, inputs and variables) De-bug code (fix syntax errors) <p>Computational thinking</p> <ul style="list-style-type: none"> Application of algorithms (create a written algorithm for a fact giving program) <p>Computer systems</p> <ul style="list-style-type: none"> Recognise Computer systems (Hardware and software) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Create an infographic for computer hardware and software) Recognises suitability within a digital artefact.(selecting the correct content for a digital artefact) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of computers | <p>Programming</p> <ul style="list-style-type: none"> Predicate code outputs (Python libraries) Modify code (on Physical computing) Create code (using / coding Micro Bits) De-bug code (fix syntax errors) <p>Computational thinking</p> <ul style="list-style-type: none"> Application of algorithms (create a flowchart) Solve problems (Micro bit project) <p>Computer systems</p> <ul style="list-style-type: none"> Recognise Computer systems (Binary) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Create a plan for an image and display it on the microbit) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of computers | <p>Computational thinking</p> <ul style="list-style-type: none"> Solve problems (using video software) <p>Computer systems</p> <ul style="list-style-type: none"> Computer communication (effective use of the internet) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Create a revisions sheet on a word processing package) Recognises suitability within a digital artefact.(selecting the correct content for a digital artefact) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of computers | <p>The application of all Skills from Y7, within an enrichment project (Last ¼ weeks)</p> <ul style="list-style-type: none"> Programming Computational thinking - Computer systems Digital artefacts Digital literacy | | |

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| Year 8 | KS3 Topic 5: Introduction to Cyber Security (14) | KS3 Topic 6: Introduction to Image Representation (12) | KS3 Topic 7: Introduction to networks (10) | E n d o f Y e a r e x a m (3) | Topic 8: Computing enrichment project (3/4) |
| | <i>Knowledge What pupils will know</i> | <i>Knowledge What pupils will know</i> | <i>Knowledge What pupils will know</i> | | <i>Knowledge What pupils will know</i> |
| | <p>Programming</p> <ul style="list-style-type: none"> • Selection (If statements) • Programming basics (recap year 7) <p>Computational thinking</p> <ul style="list-style-type: none"> • Algorithms (Flowchart selection) <p>Computer systems</p> <ul style="list-style-type: none"> • Hardware (Hardware used to protect a system)) • Software (Viusses) • Computer networks (how computers communicate) <p>Digital artefacts</p> <ul style="list-style-type: none"> • Design principles (Target audiences) • Standards tools within software (slide design, fonts, transitions and animations) <p>Digital literacy</p> <ul style="list-style-type: none"> • Online safety (recognising threats) • Cyber security (Scams and hacking) • Emerging and past technology (Past threats and attacks within society) | <p>Programming</p> <ul style="list-style-type: none"> • Iteration (While loops) • Selection (If statements) • Programming basics (recap year 7, Intro to Python Turtle) <p>Computational thinking</p> <ul style="list-style-type: none"> • Algorithms (Flowchart iteration) <p>Computer systems</p> <ul style="list-style-type: none"> • Data and Number systems (Recap year 7) • Data and Number systems (Introduction to Hex) • Data and Number systems (Introduction to images in binary) <p>Digital artefacts</p> <ul style="list-style-type: none"> • Standards tools within software (shapes in Turtle) <p>Digital literacy</p> <ul style="list-style-type: none"> • Emerging and past technology (8bit to 16bit colour) | <p>Programming</p> <ul style="list-style-type: none"> • Programming basics (HTML) <p>Computational thinking</p> <ul style="list-style-type: none"> • Decomposition and Abstraction (finding data within HTML code) <p>Computer systems</p> <ul style="list-style-type: none"> • Computer networks (LAN/WAN/WPAN and topologies) • Hardware (firewalls, servers and switchers) • DNS (IP's/MAC) (intro for IP's) <p>Digital artefacts</p> <ul style="list-style-type: none"> • Standards tools within software (tools in word processing) <p>Digital literacy</p> <ul style="list-style-type: none"> • Emerging and past technology (History and future of networking) • Online safety (reporting issues) • Cyber security (Careers) | | <p>The application of all knowledge from Y7, within an enrichment project (Last ¼ weeks)</p> <ul style="list-style-type: none"> • Programming • Computational thinking - • Computer systems • Digital artefacts • Digital literacy |
| | <i>Skill What pupils will be able to do</i> | <i>Skill What pupils will be able to do</i> | <i>Skill What pupils will be able to do</i> | | <i>Skill What pupils will be able to do</i> |
| <p>Programming</p> <ul style="list-style-type: none"> • Predicate code outputs (If's statement and operators) • Modify code (If statements and operators) • Create code (If's statements and operators) • De-bug code (fix errors) <p>Computational thinking</p> <ul style="list-style-type: none"> • Application of algorithms (create a flowchart using selection) <p>Computer systems</p> <ul style="list-style-type: none"> • Recognise Computer systems (Hardware and software used in cyber security) • Computer communication (pen testing) <p>Digital artefacts</p> <ul style="list-style-type: none"> • Create a digital artefact using appropriate tools (Create a presentation on cyber security) <p>Digital literacy</p> <ul style="list-style-type: none"> • Effective and discerning use of a range of computers | <p>Programming</p> <ul style="list-style-type: none"> • Predicate code outputs (Loops to draw images) • Modify code (Loops to draw images) • Create code (Loops to draw images) • De-bug code (fix errors, logic errors) <p>Computational thinking</p> <ul style="list-style-type: none"> • Application of algorithms (create a flowchart using iteration) <p>Computer systems</p> <ul style="list-style-type: none"> • Recognise Computer systems (Hex) • Recognise Computer systems (Binary images) <p>Digital literacy</p> <ul style="list-style-type: none"> • Effective and discerning use of a range of computers | <p>Programming</p> <ul style="list-style-type: none"> • Predicate code outputs (HTML) <p>Computational thinking</p> <ul style="list-style-type: none"> • Solve problems (Finding information within a HTML file) <p>Computer systems</p> <ul style="list-style-type: none"> • Computer communication (effective use of a network) <p>Digital artefacts</p> <ul style="list-style-type: none"> • Create a digital artefact using appropriate tools (Create a plan for an video on transition) • Recognises suitability within a digital artefact.(selecting the correct content for a digital artefact) <p>Digital literacy</p> <ul style="list-style-type: none"> • Effective and discerning use of a range of computers | <p>The application of all Skills from Y7, within an enrichment project (Last ¼ weeks)</p> <ul style="list-style-type: none"> • Programming • Computational thinking - • Computer systems • Digital artefacts • Digital literacy | | |

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| Year 9 | KS3 Topic 9: ESports (14) | KS3 Topic 10: Introduction to interface design (6) | KS3 Topic 11: Introduction to Digital Sound (6) | E n d o f Y e a r e x a m (3) | Topic 12: Computing in the real world (10) |
| | Knowledge <i>What pupils will know</i> | Knowledge <i>What pupils will know</i> | Knowledge <i>What pupils will know</i> | | Knowledge <i>What pupils will know</i> |
| | <p>Programming -</p> <ul style="list-style-type: none"> Selection and iteration (Arrays, logic errors) Programming basics (recap year 7 and 8) <p>Computational thinking -</p> <ul style="list-style-type: none"> Algorithms (Flowchart selection and iteration) <p>Computer systems</p> <ul style="list-style-type: none"> Hardware (Gaming hardware) Computer networks (how computers communicate within online gaming) <p>Digital artefacts</p> <ul style="list-style-type: none"> Standards tools within software (Spreadsheets and online forms) Advanced tools within software (Data analysis within a SS) <p>Digital literacy</p> <ul style="list-style-type: none"> Online safety (Gaming) Cyber security (Scams and hacking) Emerging and past technology (Gaming within society) | <p>Computational thinking -</p> <ul style="list-style-type: none"> Decomposition and Abstraction (Reading a brief and selecting information) <p>Computer systems</p> <ul style="list-style-type: none"> Hardware (I/O devices within design) Software (design software) <p>Digital artefacts</p> <ul style="list-style-type: none"> Standards tools within software (Interface design) Advanced tools within software (Interface design) Design principles (Interface design) <p>Digital literacy</p> <ul style="list-style-type: none"> Emerging and past technology(changes with interface design)) | <p>Computational thinking -</p> <ul style="list-style-type: none"> Decomposition and Abstraction (Reading a brief and selecting information) <p>Computer systems</p> <ul style="list-style-type: none"> Data and Number systems (Recap year 7 and 8) Data and Number systems (sounds within binary) <p>Digital artefacts</p> <ul style="list-style-type: none"> Standards tools within software (sound editing) Advanced tools within software (sound editing) Design principles (royalties of sounds and images) <p>Digital literacy</p> <ul style="list-style-type: none"> Emerging and past technology (How music and sounds have changed within the digital age) | | <p>Consolidation of Programming,Computational thinking, Computer systems, Digital artefacts and Digital literacy <i>KS3 knowledge.</i></p> <p>To gain certification via one of the following accreditors.</p> <ul style="list-style-type: none"> IBM Skill Build Idea award Code Academy Cyberfirst |
| | Skill <i>What pupils will be able to do</i> | Skill <i>What pupils will be able to do</i> | Skill <i>What pupils will be able to do</i> | | Skill <i>What pupils will be able to do</i> |
| <p>Programming -</p> <ul style="list-style-type: none"> Predicate code outputs (Iteration, array and selection) Modify code (Iteration, array and selection) Create code (Iteration, array and selection) De-bug code (fix errors (Logic, runtime and Syntax) <p>Computational thinking -</p> <ul style="list-style-type: none"> Application of algorithms (create a flowchart using selection and iteration) <p>Computer systems</p> <ul style="list-style-type: none"> Recognise Computer systems (Hardware and software used within gaming) Computer communication (Online gaming, IP and ISP)) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Create a form and spreadsheet) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of games (Recognises how to reports isess when online gaming) | <p>Computational thinking -</p> <ul style="list-style-type: none"> Solve problems (Creating a design interface for a brief) <p>Computer systems</p> <ul style="list-style-type: none"> Recognise Computer systems (Hardware and software used within Interface design) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Interface design) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of games (Recognises interface design effect end users) | <p>Computational thinking -</p> <ul style="list-style-type: none"> Solve problems (Creating a sound for a brief) <p>Computer systems</p> <ul style="list-style-type: none"> Recognise Computer systems (Sounds in Binary) <p>Digital artefacts</p> <ul style="list-style-type: none"> Create a digital artefact using appropriate tools (Interface design) <p>Digital literacy</p> <ul style="list-style-type: none"> Effective and discerning use of a range of games (Recognises to sounds are created and distributed online) | <p>Consolidation of Programming,Computational thinking, Computer systems, Digital artefacts and Digital literacy <i>KS3 knowledge.</i></p> <p>To gain certification via one of the following accreditors.</p> <ul style="list-style-type: none"> IBM Skill Build Idea award Code Academy Cyberfirst | | |