FRAMEWORK FOR LEARNING

CHS South

CREATIVE An education where imagination, curiosity and resilience enable us to ignite our learning.

HAPPY A shared belief that optimism, empathy and responsibility are the foundations for a respectful, safe and inclusive community.

SUCCESSFUL Individuals who are ready to learn, practise being reflective, and are motivated to become champions.

SUBJECT COMPUTER SCIENCE

INTENT

Studying Computer Science will help develop problem-solving, critical thinking and analytical skills. Computer Science is found in nearly all jobs and careers. Studying Computing will provide students with a versatile foundation for many different careers and allows students to develop interchangeable and transferable skills inside and outside of IT. Our students are now living in a digital age where more of their lives become intertwined with digital technologies. It is important that students understand this technology and are able to use it effectively. In Computer Science, students will develop knowledge and understanding of key computing topics that will prepare them for their future studies in Computing. They will:

Key Stage 3:

1. Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.
2. Understand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problem.
3. Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables, or arrays]; design and develop modular programs that use procedures or functions.
4. Understand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal].
5. Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.

6. Understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.
7. Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.
8. Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability.
9. Understand a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy; recognise inappropriate content, contact, and conduct, and know how to report concerns.

CHS SOUTH - CURRICULUM - FRAMEWORK FOR LEARNING

YEAR GROUP

YEAR 7

RATIONAL / NARRATIVE

In Year 7 students will study a range of topics which cover Computer Science, Information technology and Digital literacy. This year has been designed so they start to cover a large number of national curriculum strands. The strands that are covered in year 7 are listed below and the corresponding unit of study has been highlighted in brackets:

- Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability *(7.1, 7.3, 7.4, 7.5, 7.6)*
- Understand a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy; recognise inappropriate content, contact, and conduct and know how to report concerns *(7.1)*
- Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems *(7.2)*
- Undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users *(7.3, 7.5)*
- Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures (e.g. lists, tables, or arrays); design and develop modular programs that use procedures or functions *(7.5, 7.6)*
- Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem *(7.5 7.6)*

Understand simple Boolean logic (e.g. and, or, and not) *(7.5, 7.6)*

TERM KNOWLEDGE

AUTUMN 1

7.1 Clear messaging in digital media

In this unit of work students will focus on:

- Searching the Web
- Account Security
- Respectful communication online
- Cyberbullying
- Recognise and report.
- Use of presentation software and tools
- Presentation to an audience

AUTUMN 2

7.2 Networks: From semaphores to the Internet.

In this unit of work students will focus on:

- Computer networks and protocols
- Networking Hardware
- Wired and Wireless networks
- The internet
- Internet services
- The World Wide Web

SPRING 1

7.3 Gaining support for a cause.

In this unit of work students will focus on:

- Features of word processing
- Licensing appropriate images
- Credibility of sources
- Researching
- Document formatting
- Document layout

SPRING 2

7.4 Spreadsheets - Modelling Data

In this unit of work students will focus on:

- Columns, rows, and cells
- Cell referencing
- Formatting tools
- Formula
- Operators
- Autofill
- Difference between data and information
- Charts
- Functions
- Conditional formatting

SUMMER 1

7.5 Programming (Part 1)

In this unit of work students will focus on:

- Sequencing
- Variable
- Input/ process/ output
- Selection
- Operators
- Count-controlled iteration
- Problem-solving

SUMMER 2

7.5 Programming (Part 2)

In this unit of work students will focus on:

- Subroutines
- Decomposition
- Condition-controlled iteration
- Lists

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SKILLS	Students will: • Slide transitions • Slide Animation • PowerPoint formatting techniques • Font formatting • Security of accounts • Digital Literacy • Staying safe online • Respectful communication skills • Evaluation skills	Students will: • Writing – Summarising • Researching • Networking • Digital Literacy • Problem Solving • Evaluation skills	Students will: • Researching • Credibility – How to judge if information is credible. • Finding • Word Formatting skills e.g. font, formatting etc. • Writing – Blog Post • Referencing • Evaluation skills	Students will: • Format data • Create formulas for add, subtract, divide, and multiply • Create functions for SUM, COUNTA, AVERAGE, MIN, MAX, and COUNTIF • Sort and filter data • Create graphs • Use conditional formatting • Evaluation skills	Students will: • Sequencing • Variables • Selection • Operators • Count-controlled iteration • Problem-solving • Evaluation skills	Students will: • Decomposition • Subroutines • Condition-controlled iteration • Lists • Problem-solving • Evaluation skills
ASSESSMENT	**Marking Point:** Presenting to an audience – students will present their PowerPoint presentations to the class.	**Marking Point:** Which network is best? Students examine a range of scenarios and must suggest which network is best. (Extended Writing) **Marking Point:** End of topic test to check student's knowledge	**Marking Point: Blog Post.** Students will create a blog post to gain support for the cause of their choice. **Spring Progress Test:** (Week 2&3)	**Marking Point:** End of topic test to check student's knowledge of excel skills.	**Marking Point:** End of topic test to check student's knowledge of programming I skills.	**Marking Point:** assessment rubric used to assess the Programming project. **Summer Progress Test:** (Week 4&5)
HOME LEARNING	**Digital Footprint**- students create their own digital footprint.	**Networks** – students will examine a range of key terms and match them to their definitions.	**Who is your audience?** – Students will identify the audience for their blog post and what will attract them.	**Cell Referencing –** Students to use cell referencing to write instructions for someone to create a flag design in a spreadsheet	**Programming techniques** – Students will answer a range of multiple-choice questions on the different elements of programming they have examined so far.	**Significant People in Computing -** Students to research a significant person in the field of Computer Science and create a fact file about them.
READING, WRITING, TALK, NUMERACY	**Reading:** Student will read a range of text linked to being respectful online students will focus on breaking down information and learning new vocabulary. **Writing:** Students will develop expository writing skills(inform) during this half term. **Oracy:** Students will develop their physical	**Reading:** Students will read some text online linked to networks. This half term they will continue with developing their reading skills from last half term as well as relating to their own experience. **Writing:** Students will continue to develop their expository writing skills. They will also develop	**Reading:** Students will read a range of text linked to the topic. In this half term students will focus on forming opinions on the information that they read and asking questions. **Writing:** Students will write and extend pieces of writing in the form of a blog post. This will help students develop their	**Reading:** Students will read key information linked to spreadsheets. They will continue to develop skills they have learnt this year as well as focusing on developing their asking questions skills further. **Writing:** Students will continue to develop their skills in summarising and	**Reading:** Students will read key documents linked to programming skills. In this half term students will continue to develop their previous skills as well as focusing on predictions. **Writing:** Students will focus this term on writing and recording key information linked to their programming tasks.	**Reading:** Students will read key documents linked to programming skills. In this half term students will continue to focus on prediction and learning new vocab. **Writing:** Students will continue to focus this half term on summarising and explaining in their written work. Students will need to effectively be able to

	and cognitive oracy skills. Students will develop pace and clarity when they present their final presentations to the class. **Numeracy:** Students will learn to interpret numerical data linked to online safety and use it effectively in their presentation.	their comparative writing skills during their marking point. **Oracy:** Students will focus on developing their linguistic skills (vocabulary) and Social & Emotional (Listening and Responding). Students will be encouraged to use subject specific language relating to the current topic. • Protocols • World Wide Web **Numeracy:** Students will explore speed/time that data is transmitted around a network.	Journal and persuasive writing skills. **Oracy:** Students will focus on their cognitive skills particularly by focusing on their clarifying and summarising skills. **Numeracy:** Students will need to research a range of statistics to support their argument in their blog post. They will need be interpret it and present it in a suitable format e.g. Graph.	explaining the key skills they have learnt in excel. **Oracy:** Students will focus on their social and emotional oracy skills. They will continue to develop their listening and responding skills. They will also work to develop their cognitive skills, in particular their clarity and summarising skills. **Numeracy:** This unit is very numeracy focused. Students will develop skills in creating spreadsheets and using them to perform calculations. They will examine how we can collect data to be used in a spreadsheet model and then examine a range of functions that can be used to analyse the data. They will also examine how they can use conditional formatting to compare data and format the cell according to the data in it.	They will summarise and reflect on what they have learnt during each lesson. Keeping a log of what they have learnt. **Oracy:** Students will focus on developing their linguistic skills by ensuring that they use appropriate vocabulary when engaging in discussion around the topic. They will also develop further their social and emotional skills by working on their listening and responding skills. **Numeracy:** Programming contains a range of different numeracy elements. Students will examine common operators and how they are used in programming to compare data. They will also use numeracy to perform count-controlled programs.	record the different python commands and be able to explain what they do. **Oracy:** This half term students will develop their cognitive skills by focusing on their self-regulation and reasoning skills. They will also develop their social and emotional skills focusing on confidence in speaking. **Numeracy:** Students will develop their knowledge or operators in programming further during this unit of work. They will also create score variables and be able to effectively program so that the program counts.
TIER 2 VOCABULARY	• Apply • Create • Data • Define • Describe • Explain • Develop • Identify • Design • Investigate	• Define • Describe • Examine • Explain • Justify • Summarise • Draw • Suggest	• Select • Choose • Create • Data • Define • Describe • Design • Explain • Justify	• Analyse • Apply • Calculate • Complete • Create • Format • Formula • Function • Identify • Select	• Analyse • Apply • Complete • Create • Data • Define • Describe • Design • Develop • Evaluate	• Analyse • Apply • Complete • Create • Data • Define • Describe • Design • Develop • Evaluate

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TIER 3 VOCABULARY	• School Network • Authentication • Digital Footprint • Cyberbullying • Presentation • Online collaboration	• Networks • Hardware components • Wired network • Wireless network • Internet	• Word Processor • Copyright • Reliability • Plagiarism • Blog • Digital Content	• Spreadsheets • Formula • Data and information • Function • Filter • Conditional Formatting	• Sequencing • Variables • Selection • Operators • Count Controlled Iteration • Problem Solving • Count controlled iteration • Problem solving	• Subroutines • Condition Controlled loops • Loops • Lists • Decompose • Construct
PSPSMC, BRITISH VALUES AND DIVERSITY	**Personal:** Understand how to be a responsible online citizen and keep themselves safe. **Social:** Presentation to a group. Students will present their final presentation to the class. **British value:** Understand the rules the government put into place to keep them safe. **Moral:** Students to understand how to be responsible user of the web. **Physical:** Effects of computing on physical wellbeing. **Cultural:** Understand the cultural norms associated with digital issues. **Diversity:** Examine the impact of cyberbullying on different groups in society		**Personal:** Understand how they can advocate change using technology. **Social:** Learn how to structure their response in relation to a specific cause. **British value:** Understand the computer laws that are in place and how they protect individual citizens. **Moral:** Giving peer feedback in a respectful manner. **Cultural:** Understand the impact different causes will have on different members of society. **Diversity:** Students will examine causes and charities that advocate for different groups in society.		**Personal:** Developing valuable programming skills. **British value:** Consideration of the involvement of governments and companies in storing and processing data. **Moral:** Giving peer feedback in a respectful manner. **Diversity:** Explore how different communities have contributed to the advancements in computing and programming. Use of black history month video's from code.org **Cultural:** Explore an examine people from different backgrounds and communities and how they have contributed to computer science	