CHJS Curriculum Map for Computing

Let your light shine (Matthew 5:16)

In Computing, children are encouraged to let their light shine by taking delight in learning about the God's wonderful world around them. By appreciating the world of technology, children know how to make positive changes to the world around them and are aware of how computer technology continues to change and influence the world around them. They are also encouraged to make positive changes within their classroom by sharing their knowledge with their peers and supporting each other with their learning.

Substantive Knowledge	Year 3 and 4 Cycle B	Year 3 and 4 Cycle A	Year 5	Year 6
Computer Science	• Explain how digital devices function and identify input and output devices. • Recognise that a computer network allows us to share information and we can use this to change the way we work. • Explain how digital devices are connected. • Understand the physical components of a network. • Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.	• Use logical thinking to solve an open-ended problem by breaking it up into smaller parts. • Use an efficient procedure to simplify an algorithm • Explain how an algorithm helps with sequencing more complex programs. • Navigate the Scratch programming environment. • Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	• Explain that systems are built using a number of parts. • Identify tasks that are managed by computer systems, the human elements of a computer system and the benefits of a given computer system. • Explain that computer systems communicate with other devices. • Understand how using if/then commands and variables will make programs more efficient and alter outcomes. • Orally explain how a computer model can provide information about a physical system. • Design, write and debug programs that accomplish	• Explain how each individual step in a programme impacts the outcome. • Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration • Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing,

	• Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • Know how to break an open-ended problem up into smaller parts. • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	• Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs • Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. • Explore new media and assess how it may be used to achieve a specific outcome. • Understand the parts of a computer or device and explain differences and similarities.	specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	evaluating and presenting data and information • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Information Technology	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs,	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	• Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in

	• Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals. • Use technology safely, respectfully and responsibly.	systems, and content that accomplish given goals. • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour. • Identify a range of ways to report concerns about content and contact. • Be digitally discerning when evaluating the effectiveness of their work and the work of others.	• Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour. • Identify a range of ways to report concerns about content and contact.	evaluating digital content • Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals. • Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour. • Identify a range of ways to report concerns about content and contact.
Digital Literacy	• To understand what positive, healthy and respectful online relationships look like. • To understand the effect of theirs and others actions online. • To recognise and display respectful behaviour online. • To use technology safely, respectfully, responsibly and securely. • To understand where to go for help and support when they have concerns about content or contact on the internet or other online technologies.			
Disciplinary Knowledge	**Year 3 and 4 Cycle B**	**Year 3 and 4 Cycle B**	**Year 5**	**Year 6**

Computer Science	• Write a program on Hour of Code. • To use more advanced Scratch programming. • Change the design and background on Scratch. • To create a sequence of commands and understand that these can have an order. • Input programming commands into a sequence to achieve a specific outcome. • Use the 'repeat' (loop) command within a series of instructions. • To create a project from a given description. • Evaluate the effectiveness of own script.	Use a variety of tools to create a program. • Test and debug algorithms. • Create a background and sprite for a game. • Add inputs to control their sprite. • Use conditional statements (if… then) within their game. Use variables to configure external outputs within Scratch. • Use conditional statements and infinite loops. • Write scripts for games with more than one sprite and more than one background. • Use the 'wait' function to sequence the script. •	• Decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. • Refine a procedure using repeat commands to improve a program • Test and debug algorithms. • Test and debug algorithms. • Create a game with multiple backgrounds and sprites using an online tool. • Create a sprite for an animation and design it's costumes. • Use external triggers and infinite loops to control sprites. • Create and edit variables • Use variables to configure external outputs • Use external inputs to control external outputs. • Describe the input, process, and output of a digital system.	• Critically evaluate the effectiveness and efficiency of their own algorithms, including testing and debugging. • Use variables and operators to stop or start a programme. • Decompose a problem to design an algorithm for a specific outcome and compare this to solutions they have found before.
Information Technology	• Building and using branching databases to group objects using yes/no questions • Collect, analyse, evaluate, and present data and information.	• Recognising how and why data is collected over time, before using data loggers to carry out an investigation. • Collect, analyse, evaluate, and present data and information.	• Using a database to order data and create charts to answer questions. • Collect, analyse, evaluate, and present data and information.	• Answer questions by using spreadsheets to organise and calculate data. • Create and build a data set in a spreadsheet.

	• Give and receive constructive feedback and act on it to improve their work. • Identify potential applications of unfamiliar technology and use the skills already developed to create content.	• Create different effects with different technology tools such as sound and images and select these to suit the audience. • Combine a mixture of text, graphics and sound to share my ideas and learning. • Know how appropriate keyboard commands can amend text on a device, including making use of a spellchecker. • Give and receive constructive feedback and act on it to improve their work. • Identify keywords to search safely and efficiently online. • Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled. • Consider audience, atmosphere and structure when planning a particular outcome and use text, photo, sound and video editing tools to refine. • Identify potential applications of unfamiliar	• Creating images in a drawing program by using layers and groups of objects. • To use a digital device to record a video. • Use a digital device to shoot, edit and record a video. • Understand what makes a video effective and use a range of techniques when recording a video. • Consider the choices made when creating and sharing their own videos. • Edit and refine their work to improve outcomes.	• Explain that formulas can be used to produced calculated data and apply this. • Collect, analyse, evaluate, and present data and information. • Choose a suitable way to present their own data. • Plan, develop, and evaluate their own website. • Review an existing website, consider its structure and the features of web page. • Outline the need for a navigation path on a web page. • Recognise the implications to linking to content made by other people.

		technology and use the skills already developed to create content. • Combine a range of media to achieve a particular outcome and explain the purpose and effectiveness of each. • Use a search engine to find appropriate information and check its reliability. • Save and retrieve work on the internet, the school network or my own device.		
Digital Literacy	• Explain what is meant by the term 'identity'. • Explain how people can represent themselves in different ways online. • Explain ways in which someone might change their identity depending on what they are doing online and why. • Explain what it means to 'know someone' online and why this might be different from knowing someone offline. • Explain what is meant by 'trusting someone' online,	• Explain how my online identity can be different to my offline identity. • Describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. • Explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. • Give examples of how to be respectful to others online and how to recognise	• Explain how identity online can be copied/ modified or altered. • Demonstrate how to make responsible choices about having an online identity, depending on context. • Give examples of technology – specific forms of communication (e.g. emojis, memes, gifs) • Explain that there are some people I can communicate with online who may want to do me or my friends harm/ I can recognise this is not my/our fault.	• Identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. • Explain how sharing something online may have an impact positively or negatively. • Describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.

	and why it is important to be careful about who to trust online including what information and content they are trusted with. • Explain how someone's feelings can be hurt by what is said or written online. • Explain the importance of giving and gaining permission before sharing things online. • Explain how to search for information about others online • Give examples of what anyone may/may not be willing to share about themselves online. • Describe appropriate ways to behave towards other people online and why this is important. • Give examples of how bullying behaviour could appear online and how someone can get support. • Demonstrate how to use key phrases in search	healthy and unhealthy behaviours. • Describe how to find out information about others by searching online. • Explain ways that some of the information about anyone online could have been created, copied or shared by others. • Recognise when someone is upset, hurt or angry online. • Explain why people need to think carefully about how content they post might affect others, their feelings and how it may affects how others feel about them. • Describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy. • Describe some of the methods used to encourage people to buy things online. • Describe why lots of people sharing the same opinions or beliefs online do not make	• Explain how someone can get help if they are having problems and identify when to tell a trusted adult. • Demonstrate how to support others (including those who are having difficulties) online. • Search for information about an individual online and summarise the information found. • Explain the ways in which anyone can develop a positive online reputation. • Explain strategies anyone can use to protect the 'digital personality' and online reputation, including degrees of anonymity. • I can recognise that online bullying can be different to bullying in the physical world and can describe some of those differences. • Explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult. • Identify a range of ways to report concerns and access	• Describe how things shared privately online can have unintended consequences for others. E.g. Screen-grabs • Explain that taking or sharing inappropriate images of someone, even if they say it is okay, may have an impact for the sharer and others. • Describe how to capture bullying content as evidence (e.g. Screen-grab, URL, profile) to share with others who can help me. • Explain how someone would report online bullying in different contexts. • Explain what is meant by a 'hoax'. • Explain why someone would need to think carefully before they share. • Explain how search engines work and how the results are selected and ranked. • Explain how and why some people may present opinions as facts; why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal. • Define the terms 'influence', 'manipulation', and

	engines to gather accurate information online. • Explain the difference between a belief, an opinion and a fact and give examples of how and where they might be shared online. • Explain that not all opinions shared may be accepted as true or fair by others. • Describe simple strategies for creating and keeping passwords private. • Explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.	those beliefs or opinions true. • Explain that technology can be designed to act like or impersonate living things (e.g. bots) and describe what the benefits and risks might be. • Explain what is meant by fake news. • Know what the digital age of consent is and the impact this has on online services asking for consent. • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to use it. • Give some simple examples of content which I must not use without permission from the owner.	support both in school and at home about online bullying. • Explain how to block abusive users. • Describe the helpline services which can help people experiencing bullying, and how to access them. • Explain the benefits and limitations of using different types of search technologies. • Describe ways of identifying when online content has been commercially sponsored or boosted. • Explain what is meant by the term 'stereotype', how 'stereotypes' are amplified and reinforced online. • Describe how fake news may affect someone's emotions and behaviour. • Explain what a strong password is and demonstrate how to create one. • Explain how many free apps or services may read and share private information.	'persuasion' and explain how someone might encounter these online (e.g. advertising and 'ad targeting' and targeting for fake news.) • Understand the concept of persuasive design and how it can be used to influence peoples' choices. • Demonstrate how to analyse and evaluate the validity of facts and information. • Describe the difference between online misinformation and disinformation. • Explain why information that is on a large number of sites may still be inaccurate or untrue. • Identify, flag and report inappropriate content. • Explain what to do if a password is shared, lost or stolen. • Describe how and why people should keep their software and apps up to date. • Describe simple ways to increase privacy on apps and services that provide privacy settings.

			• Explain what app permissions are and can give some examples. • Assess and justify when it is acceptable to use the work of others. • Give examples of content that is permitted to be reused and know how this content can be found online.	• Describe ways in which some online content targets people to gain money or information illegally • Demonstrate the use of a search tool to find and access online content which can be reused by others.
Vocabulary	**Year 3 and 4 Cycle B**	**Year 3 and 4 Cycle A**	**Year 5**	**Year 6**
Computer Science	Programming, scratch, sprite, commands, program, sequence, debug, design, backdrop, control, actions, project. Digital device, input, output, computer network, process, connections, non-digital, network, switch, publishing.	Programming, scratch, sprite, commands, program, sequence, debug, design, control, actions, project, predict, repetition, algorithm. Network, information, world wide web, services, web pages, media.	Programming, scratch, sprite, commands, program, sequence, debug, design, control, actions, project, infinite loop, algorithm. Component, connected, computer system, web search, web crawlers, index, search engine, selection.	Commands, program, sequence, debug, design, control, actions, project. Internet, internet address, internet devices, data packet, shared files, communicate.
Information Technology	Text, images, font, style, keys, return, backspace, shift, templates, orientation, screenshots, video, layout, content, publishing. Database, investigate, attributes, question, data, branching database, software.	Photo, editing, rotation, rotate, crop, software, effects, image, composition, cloning, review. Data, sensor, question, data logger, logged data, interpret.	Video, visual, media, format, device, recording, filming, techniques, camera angles, scenes, content, store, retrieve, export, outcome, evaluate. Database, field, cell, record, data, search, compare.	Website, media, HTML, design, layout, copyright, navigation path, hyperlink, evaluate. Data, format, cell, formula, spreadsheet, output.

Digital Literacy	Copyright, gaming, identity, avatar, social media, password, secure, online identity, permission.	Copyright, content, permission, social media, livestreaming, platform, gaming, online, searching, online identity, private, fake news, secure.	Identity, copy, modify, alter, original, content, permission, online identity, emoji, meme, gif, identity, online identity, digital personality, stereotypes.	Phising, scams, screen-grab, URL profile, hoax, identity, online identity, digital footprint, influence, manipulation, persuasion, ads, fake news, misinformation, disinformation, flag, report, secure, persuasive design.
Cross-curricular links	• History – Stone age (Autumn 1) • Geography – Weather forecasts (Autumn 2) • Maths – Computing Systems & Networks (Autumn 2) • Art – Computing Systems and Networks (Autumn 2) • English (Spring 2) • History – Egyptians (Summer 2)	• PSHE – Computer Systems and Networks (Autumn 2) • History – The Romans (Autumn 2) • Science – Famous Scientists (Spring 1) • Science (Summer 1)	• Internet safety – Data and Information (Spring 2) • Geography - Fieldwork (Spring 2) • Geography – Maps (Summer 1)	• English – Creating Media (Spring 1) • Geography – Trade and Economics (Summer 1) • Maths – Data and Information (Summer 1)
Christian Values	**Courage –** Children develop courageous advocacy to make positive changes in the world. They show the courage to take risks and learn from mistakes by using technology and learning about technology around the world. **Fairness:** Through Computing, children learn about the importance of fairness and how to treat people fairly both online and in the real world. Children are made aware of who they can contact if they believe they or someone they know is being treated unfairly. **Kindness:** Children are able to compare both their prior knowledge and learning in school with each other within computing lessons. Mutual respect is always demonstrated within computing lessons when sharing ideas, findings or presenting their projects. Children are also given the opportunity to show compassion to other countries around the world who do not have access to the same technology that they do in school.			

	Koinonia: Through this subject, children can demonstrate understanding and respect of other cultures and beliefs, and how these can be shared through technology. They also show compassion for other countries who do not have the same technologies as we do. **Responsibility:** Children develop the discipline for seeking wisdom. They know that they are caretakers of the planet and how our everyday actions and small changes can make a difference. Children understand that it is their responsibility to keep personal information secure and safe when using online platforms. They also know that what they choose to do, say and share online is their responsibility. **Thankfulness:** Children show thankfulness for the world of technology and how it is constantly changing and developing and they are thankful for the wonder of creation.
Spiritual Development	We highly encourage the children to develop their awe and wonder of computing. Children are able to question and debate the different technologies across the world and how they are used in our everyday lives. Through our Computing lessons children are able to explore and discover different elements of computing including computer science, information technology and digital literacy. Children explore the beliefs in computing and the faith we have in the computing world around us. The children are given many opportunities and experiences within computing and are able to understand the impact of technology on how we live our lives today.