St Andrew’s Church of England Junior School - Progression of Skills and Knowledge: Computing

At St Andrew’s our vision statement is **‘Shining Light on a World of Possibilities’** and we have designed our curriculum to be relevant, exciting and creative, underpinned by our school values and based around our ‘curriculum drivers’:

- Curiosity, enquiry and creativity
- Community
- Possibilities

This document aims to give guidance on the progression of Computing knowledge and skills across the year groups.

Strand	Area of knowledge	Year 3	Year 4	Year 5	Year 6
Multimedia	Skills	• Use individual fingers to input text and use SHIFT key to type characters. • Amend text by highlighting and using SELECT/DELETE and COPY/PASTE. • Swap between letters and symbol input on a tablet • Add shapes and word art to documents and presentations • Navigate to save and retrieve files • Use images saved to camera roll within a variety of Apps. • Use Google drive to save files • Copy and rename files to edit on tablets	•Use a keyboard effectively, including the use of numbers •Know how to use spellcheck •Be aware of keyboard shortcuts on laptops and PCs. •Change font sizes and colour of text •Use appropriate screen capture and insert in document or presentation •Rename documents and other files •Create hyperlink to a website •Recognise appropriate online sources for clipart and images	• Use keyboard to confidently input text, characters and numbers • Use bullet points • Add text boxes • Move, resize and rotate shapes, text and pictures • Use common keyboard shortcuts on laptops and PCs • Combine appropriate apps using the camera roll on a tablet • Combine software to achieve effective outcomes. • Work collaboratively on documents and presentations Create hyperlinks within and between documents	• Effectively use right click menu within documents and presentations • Recognise file types for text, image, and video files • Save as a particular file type • Select menu options within a variety of apps • Create tables • Use find and replace when editing documents • Store documents and videos online where they can be accessed by themselves and shared with others • Use knowledge of software and apps to combine technologies to support my learning
	Concepts and Understanding	• Text, graphics, and sound can be combined to present ideas and learning • Evaluating work can improve the effectiveness of outcomes	•Tools can be used to create atmosphere •Using constructive feedback and providing constructive feedback can improve the effectiveness of outcomes •Appropriate tools allow collaboration online	• Effective strategies can be used to refine work • Skills and knowledge can be used with unfamiliar technologies • Effective outcomes can impact on others	•Plan for atmosphere and outcomes •Identify technology to increase potential for creativity •Select online tools for different purposes •Different media have different file types
	Expectations	• I can create different effects with different	• I can use photos, video and sound to create an	•I can use text, photo, sound and video editing tools to refine my	• I can talk about audience, atmosphere

		technology tools. • I can combine a mixture of text, graphics and sound to share my ideas and learning. • I can use appropriate keyboard commands to amend text on my device, including making use of a spellchecker. • I can evaluate my work and improve its effectiveness. I can use an appropriate tool to share my work online.	atmosphere when presenting to different audiences. • I am confident to explore new media to extend what I can achieve. • I can change the appearance of text to increase its effectiveness. • I can create, modify, and present documents for a particular purpose. • I can use a keyboard confidently and make use of a spellchecker to write and review my work. • I can use an appropriate tool to share my work and collaborate online. • I can give constructive feedback to my friends to help them improve their work and refine my own work.	work. •I can use the skills I have already developed to create content using unfamiliar technology. •I can select, use and combine the appropriate technology tools to create effects that will have an impact on others. •I can select an appropriate online or offline tool to create and share ideas. •I can review and improve my own work and support others to improve their work.	and structure when planning a particular outcome. • I can confidently identify the potential of unfamiliar technology to increase my creativity. • I can combine a range of media, recognising the contribution of each to achieve a particular outcome. • I can tell you why I select a particular online tool for a specific purpose. • I can be digitally discerning when evaluating the effectiveness of my own work and the work of others.
	Experiences	• Create eBook with text, images and hyperlinks and sound • Manipulate an image for effect • Create a mood with sound • Video *(and greenscreen)* • Edit text within slides and documents • Create a word cloud	•Create a comic book •Create a persuasive advert •Use music creation software •Create and edit video	• Create documents and slides • Presentation using slides • *Use greenscreen to create weather forecast* • Create audio including sound effects • *Use CAD to create a building*	•Create promotional video •Use hyperlinks within a non-linear presentation •Build a location within Minecraft and capture to use within own creative writing
	Computational thinking	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition

		Algorithm design Abstraction and generalisation	Algorithm design Abstraction and generalisation	Algorithm design Abstraction and generalisation	Algorithm design Abstraction and generalisation
Key vocabulary		Animate/animation App Backspace Clipart Copy Delete Document Edit Enter Folder Font Greenscreen Image Insert Narration Keyboard Open Photo(graph) Print Right click Save Select Shift Slides Software Sound Space bar Text Video / Film	Animate/animation App Backspace Clipart Comic strip Document Edit Enter Folder Font Greenscreen Image Insert Heading Hyperlink Narration Presentation Right click Select Shift Slides Software Sound effect Space bar Storyboard Text	Animate Animation App Audience Bullet points Clipart Comic strip Document Edit Folder Font Greenscreen Insert Heading / sub-heading Hyperlink Layout Narration Persuasive Right click Select Screen shot Shift Slides Software Sound effect Sound recording Storyboard Style Tab	Animate Animation App Audience Bullet points Clipart Comic strip Document Edit Folder Font Greenscreen Insert Heading / sub-heading Hyperlink Layout Narration Persuasive Production Right click Select Screen shot Shift Slides Software Sound effect Sound recording Storyboard *Style* Tab Template Theme
Programming	Skills	• Connect peripheral devices using USB lead • Use Google drive to save • Copy and rename files to edit • Use repeat commands • Continual testing of parts as a program is made • Run parts of a program without a control block	•Copy and rename files •Continual testing and debugging of parts of sequence as a program is made •Use decomposition to identify parts of a problem •Plan more than one sequence in an algorithm for specific outcomes •Set rotation style for a sprite	• Work collaboratively to learn and create • Investigate an individual block to improve understanding of what it will do • Make and use a variable in a program • Creating and importing sprites and backgrounds	• Securely access a variety of devices and online resources • Store projects online where they can be accessed by themselves and shared with others • Work collaboratively to learn and create

		• Add a control block when needed in a program
		• Add sound to a program
		• Add a background
		• Change costume of a sprite
		• Make and run a program for more than one sprite
		• Use decomposition to identify parts of a problem
		• Plan an algorithm for a specific outcome
		• Debug a program
			•Make a background
			•Use of if…then selection block and Forever block
			•Use of if on edge bounce block
			•Explanation of purpose of blocks
			•Collaboration to support and learn from others
			•Self-assessment using RAG model
			•Peer assessment (2 stars and a wish)
				• Recording voice
				• *Edit sound in Scratch*
				• Use selection and forever
				• Use operator blocks
				• Change input to a program
				• Decomposition of a problem
				• Thinking through an algorithm as part of a design
				• Identify sprites and backgrounds as part of design
				• Recognising and debugging an error
				Evaluate and refine project
					• Investigating an individual block to improve understanding
					• Use abstraction to identify ideas to incorporate in design
					• Make a block - define a sequence as a procedure to use within a program
					  • Use operator blocks for calculations, including pick random
					  • Self and peer review
					  • Review, refine and improve projects

	Concepts and Understanding	• Use of 'Repeat' will make a program more efficient • An algorithm can be implemented as a program • A problem in an algorithm can lead to unsuccessful programming	•Importance of ongoing continual testing as a program is built •Importance of algorithm to implement more complex programs •Selection increases programming possibilities	• Decomposition as part of algorithm design • Use of variables to control a program • Importance of forever as part of selection • Imagination and logical thinking increase creativity	•Abstraction to increase manageability and effectiveness of design process •Errors can occur in algorithm as well as in program •Variables can be an input and can be used to control output
	Expectations	• I can break an open-ended problem up into smaller parts. • I can put programming commands into a sequence to achieve a specific outcome. • I keep testing my program and can recognise when I need to debug it. • I can use repeat commands. • I can describe the algorithm I will need for a simple task. • I can detect a problem in an algorithm which could result in unsuccessful	•I can use logical thinking to solve open-ended problem by breaking it up into smaller parts. •I can use an efficient procedure to simplify program. •I can use a sensor to detect a change which can select an action within my program. •I know that I need to keep testing my program while I am putting it together. •I can use a variety of tools to create a program. •I can recognise an error in a program and debug it. •I recognise that an algorithm will help me to sequence more complex programs.	• I can decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. • I can refine a procedure using repeat commands to improve a program. • I can use a variable to increase programming possibilities. • I can change an input to a program to achieve a different output. • I can use 'if' and 'then' commands to select an	•I can deconstruct a problem into smaller steps, recognising similarities to solutions used before. •I can explain and program each of the steps in my algorithm. •I can evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. •I can recognise when I need to use a variable to achieve a required output. •I can use a variable and operators to stop a program.

		programming.	•I recognise that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.	action. • I can talk about how a computer model can provide information about a physical system. • I can use logical reasoning to detect and debug mistakes in a program. • I use logical thinking, imagination, and creativity to extend a program.	•I can use different inputs (including sensors) to control a device or onscreen action and predict what will happen. •I can use logical reasoning to detect and correct errors in a algorithms and programs.
	Experiences	• Guided exploration of Scratch blocks • Prediction of outcomes of short sequences • Use of block challenges to assess knowledge • Think through an algorithm for a dance, RAG, and implement as a program • Debug own and programs of others • Investigate, modify, and make an interactive story • Apply knowledge using other software / apps • Apply knowledge to program a physical object	•Predict purpose of sequences for Etch a Sketch •Modify and make sequences for own Etch a Sketch •Predict, investigate, modify, and make game •Sensor used to select an action in a game •Decomposition to plan algorithms for parts of game •Use of block challenges to assess knowledge •RAG algorithm and implement as a program •Debug own and programs of others •Apply knowledge using other software / apps •Apply knowledge to program a physical object	• Use of block challenges to assess knowledge • Predict, Run, Investigate, and modify a Scratch program that includes variables • Use and modify to improve sequences • Design process to make a simple counting system • RAG algorithm and implement as a program • Apply knowledge using other software / apps • *Apply knowledge to program a physical object*	•Use of block challenges to assess knowledge •Predict, Run, Investigate, and modify a simple and a more complex Scratch Times Table quiz •Use a variable as a score •Make times table quiz more efficient •Design process to make own quiz •RAG algorithm and implement as a program •Apply knowledge using other software / apps •Apply knowledge to program a physical object
	Computational thinking	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation

Key vocabulary		Algorithm Background Block Collaboration Command Debug Imagine Make mistakes Movement Pattern Persevere Repeat Sequence Sprite Stage Wait / Pause	Algorithm Background Block Collaboration Command Control Costume Debug Design Effect Event Forever Imagine Implement Input Make mistakes Movement Pattern Output Persevere Repeat Rotation Sequence Sprite Stage Wait / Pause	Algorithm Block Collaboration Command Control Debug Design Effect Event Forever Imagine Implement Input Make mistakes Pattern Output Persevere Repeat Rotation Selection (If Then) Sequence Sprite X position / Y position	Algorithm Block Collaboration Command Computational thinking Control Debug Decomposition Design Effect Event Forever Imagine Implement Input Make mistakes Pattern Output Persevere Repeat Rotation Selection (If Then) Sequence Sprite Variable X position / Y position
Technology in our lives	Skills	• Navigate Google drive to save and retrieve files • Charge and store devices appropriately • Use an appropriate search engine eg Swiggle • Ask relevant questions and identify key words • Use + and – and '' to filter results of a search • Evaluate information online • Talk about reliability of information • Identify images that can be used in my work • *Scan a QR code*	• Browse to a specified website • Create hyperlink to a website • Recognise appropriate online sources for clipart and images • Check for reliability of information • Add knowledge to an online tool • Identify key words to use for a search query • Acknowledge work of other people • Navigate school network • Find a document on device or school network Create hyperlinks to content on	• Identify different parts of the internet • Explain understanding • Efficient web searching • Distinguish between reliable and unreliable sources of information • Recognise persuasion in advertising • Recognise resources which can be downloaded (considering copyright) • Cite sources of images and text • Add positive comments online • *Use of safe alias in online*	•Securely access a variety of devices and online resources •Store documents and videos online where they can be accessed by themselves and shared with others •Use knowledge of software and apps to combine technologies to support my learning •Explanation of learning •Create a graphic organiser

		• *Create a QR code* • Use an appropriate tool to communicate online Explain understanding of Internet and World Wide Web	world wide web	*community* • *Effective navigation of Google Earth*	•Use effective search skills – filters, knowledge of appropriate search engines and websites •Use a collaborative tool to collect and share information with peers
	Concepts and Understanding	• World wide web is one part of the Internet that includes websites • Not all information online is reliable (or in books) • Different search engines provide different results	•Web pages need to be checked for reliability •Sources of information must be acknowledged •Digital information can be stored locally or online	• World wide web is one part of the Internet that includes websites • Reliability of information • Search results are selected and ranked by private companies	•Internet services are used for different purposes •Information is moved in packets on the internet •Responsibility is part of using online resources for own purposes
	Expectations	• I can save and retrieve work on the Internet, the school network, or my own device. • I can talk about the parts of a computer. • I can tell you ways to communicate with others online. • I can describe the World Wide Web as the part of the Internet that contains websites. • I can use search tools to find and use an appropriate website. • I think about whether I can use images that I find online in my own work.	•I can tell you whether a resource I am using is on the Internet, the school network, or my own device. •I can identify key words to use when searching safely on the World Wide Web. •I think about the reliability of information I read on the World Wide Web. •I can tell you how to check who owns photos, text, and clipart. •I can create a hyperlink to a resource on the World Wide Web. •I can recognise that websites use different methods to advertise products	• I can describe different parts of the Internet. • I can use different online communication tools for different purposes. • I can use a search engine to find appropriate information and check its reliability. • I can recognise and evaluate different types of information I find on the World Wide Web. • I can describe the different parts of a webpage. • I can find out who the information on a webpage belongs to • I know which resources on the Internet I can download and use. • I can describe the ways in which websites advertise their products to me.	•I can tell you the Internet services I need to use for different purposes. •I can describe how information is transported on the Internet. •I can select an appropriate tool to communicate and collaborate online. •I can talk about the way search results are selected and ranked. •I can check the reliability of a website. •I can tell you about copyright and acknowledge the sources of information that I find online. •I know that websites can use my data to make money and target their advertising
	Experiences	• Find information on local computer	•Investigate a spoof website •Discuss what is 'true' online and	• Explanation of different parts of the internet	•Make a list of internet services and their use

		• Explanation of Internet and World Wide Web • Identify an appropriate search engine • Use an appropriate search engine to find information relevant to current topic • Filter searches to efficiently find information • *Create a QR code* • *Communicate safely with others online* • *Investigate reliability of information*	how we can check for reliable information •Use online tool (eg Padlet) to share learning •See the use of a citation to recognise the source of a photo and acknowledge source in own work •Investigate and find resources on school network •Create a guide to school network •Add hyperlink to a webpage within project work •Investigate use of different search engines	• Explanation of how search engines work • Evaluate content of a website • Create a checklist to identify reliable information • Investigate digital advertising • *Use Google Earth to explore earth and locality* • *Participate in Scratch online community* • *Consider access to the internet across world*	•Explanation of how information is stored and moves on the internet •Create a graphic organiser to represent a webpage •Investigate search engines •Plan an effective strategy for research •Explanation of citing sources of information •Use online collaborative tools such as Padlet
	Computational thinking	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation
Key vocabulary		Communicate Computing devices email Internet QR Code Search engine Search result World Wide Web	Blog Communicate Computing devices Copyright email Hyperlink Internet QR Code Reliability Search engine Search result Search query Vlog Webpage Website World Wide Web	Blog Citation Communicate Computing devices Copyright Email Digital content Digital advertising Hyperlink Internet QR Code Reliability Search engine Search result Search query Vlog Webpage	Blog Citation Client Copyright Digital content Digital advertising Hyperlink Internet Service Provider QR Code Reliability Search engine Search result Search query Vlog Webpage Website

				Website World Wide Web	
Handling data	**Skills**	• Connect peripheral devices using USB lead • Use images saved to camera roll within a variety of Apps. • Use Save and Save As on laptops and PCs. • Use a datalogger or data logging app • Take photographs • Use appropriate apps and/or software to collect and record data • Present data for others to understand • Make decisions about data to be collected	•Rename documents and other files •Use appropriate screen capture and insert in document or presentation •Add data to a graphing program •Interrogate data •Plan a database •Create a branching database • Sort a database to answer questions •Use a data-logger or data logging app to record discrete and continuous data	• Combine appropriate apps using the camera roll on a tablet • Combine software to achieve effective outcomes. • Work collaboratively on documents and presentations • Interrogate information presented by others • Plan an investigation • Measure data in different circumstances • Identify data type to collect – continuous or discrete • Add to a spreadsheet • Add to a database • Graph information in database or spreadsheet	•Store documents online where they can be accessed by themselves and shared with others •Use knowledge of software and apps to combine technologies to support my learning •Interrogate an online database •Interpret data •Plan an investigation of data collected by others •Plan an investigation that will require data logging •Identify outcomes to share with others •Present outcomes responsibly
	Concepts and Understanding	• Data-loggers, or data logging apps, sense and record changes • Data can be represented in different ways • Different investigations may need data collected in different ways	•Data becomes information when it has a context and units of measure •Information can be collected as discrete or continuous data •A database can be filtered to provide answers to questions	• Data becomes information as it is interpreted and presented to others • Data can be collected in different ways and may be discrete or continuous • Plausibility of data	•Data becomes information when it is set in a context and becomes knowledge as it is interpreted and presented to others •We have a responsibility to share accurate data and information •Big Data is available to increase information and knowledge
	Expectations	• I can talk about the different ways data can be organised. • I can search a ready-made database to answer questions. • I can collect data help me answer a question. • I can add to a database.	•I can organise data in different ways. •I can collect data and identify where it could be inaccurate. •I can plan, create and search a database to answer questions. •I can choose the best way to present data to my friends. •I can use a data logger to record	• I can use a spreadsheet and database to collect and record data. • I can choose an appropriate tool to help me collect data. • I can present data in an appropriate way. • I can search a database	•I can plan the process needed to investigate the world around me. •I can select the most effective tool to collect data for my investigation. •I can check the data I collect for accuracy and plausibility. • I can interpret the

		• I can make a branching database. • I can use a data logger to monitor changes and can talk about the information collected	and share my readings with my friends.	using different operators to refine my search. • I can talk about mistakes in data and suggest how it could be checked.	data I collect. •I can present the data I collect in an appropriate way. •I use the skills I have developed to interrogate a database.
	Experiences	• Explore different ways to represent data • Explore a ready-made database • Use a datalogger to investigate shadows around the school • Collect, organise, and present data about the game's children play on electronic devices • *Play Top Trumps and talk about the data used* • *Use a branching database and database to sort information about animals* • *Draw and interpret a graph about animals* • *Investigate light in different parts of the school*	•Discuss differences between data and information •Measure sound levels using a data logger or data logging app •Record changes in noise levels •Plan an investigation of sound insulation and present findings •Use a graphing program or spreadsheet •Create a branching database to sort and classify game characters •Use an online database •Search database to answer questions	• Collect data about planets, create Top Trump cards • Create a database or spreadsheet of planets • Answer questions by interrogating database created by others • Identify errors in a database or spreadsheet • Present investigation findings to others • Compare databases • *Consider conservation of water through data* • *Learn about computer modelling* • *Measure rainfall and compare to national data* • *Plan an investigation about melting and cooling* • *Investigate active lifestyle choices*	•Consider data and information in an online database eg Olympics •Explore different online databases •Use an online database to answer questions set by friends •Plan an investigation based on online data •Select information to present to others •Use data loggers and other devices for an investigation about fitness •Present findings of an investigation to others
	Computational thinking	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation	**Attitudes** Comfortable making mistakes Perseverance Imagination Collaboration **Skills** Pattern recognition Decomposition Algorithm design Abstraction and generalisation
Key vocabul		Branching database Chart	Branching database Chart	Chart Collect	Analyse Average

ary		Collect Database Data logger Decision tree Graph Investigate Questions Record Results Tally Sort Venn diagram	Collect Data Database Data logger Decision tree Graph Information Interpret Investigate Predict Questions Record Results Tally Sort Venn diagram	Complex questions Data Database Data logger Decision tree Field Graph Hypothesis Information Interrogate Interpret Investigate Model Predict Questions Record Results Tally Sort Venn diagram	Chart Collect Complex questions Data Database Data logger Decision tree Field Graph Hypothesis Information Interrogate Interpret Investigate Knowledge Model Plausible Predict Process Questions Record Results Tally Sort Venn diagram