St Augustine's School

Computing Components and Composite

Reception	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*	*Year 6*
Early Learning Goal ***N/A - Computing to run through all aspects***	National Curriculum Objectives: 1. Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or their online technologies. 2. Pupils should be taught to use technology purposefully to create digital content. 3. Pupils should be taught to use technology purposefully to create digital content. 4. Pupils should be taught to use technology purposefully to organise and manipulate digital content. 5. Pupils should be taught to use technology purposefully to store and retrieve digital content and to recognise common uses of information technology beyond school.		National Curriculum Objectives: 1. Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour, identify a range of ways to report concerns about content and contact. Be discerning in evaluating digital content. 2. Pupils should be taught to 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. 3. Pupils should be taught to 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. 4. Pupils should be taught to 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. 5. Pupils should be taught to 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.			
			1. Digital Literacy/E-safety			
I can tell an adult when I see something unexpected or worrying online. I can begin to use a keyboard, mouse, trackpad and touchscreen. I can recognise an age appropriate website. I can agree and follow sensible e-Safety rules.	• I can keep my password private. • I can tell you what personal information is. • I can tell an adult when I see something unexpected or worrying online. • I can talk about why it's important to be kind and polite. • I can recognise an age appropriate website. • I can agree and follow sensible e-Safety rules. • I can use a keyboard, mouse, trackpad and touchscreen.	• I can explain why I need to keep my password and personal information private. • I can describe the things that happen online that I must tell an adult about. • I can talk about why I should go online for a short amount of time. • I can talk about why it is important to be kind and polite online and in real life. • I know that not everyone is who they say they are on the Internet. • I can use a keyboard, mouse, trackpad and touchscreen with more confidence.	• I can talk about what makes a secure password and why they are important. • I can protect my personal information when I do different things online. • I can use the safety features of websites as well as reporting concerns to an adult. • I can recognise websites and games appropriate for my age. • I can make good choices about how long I spend online. • I ask an adult before downloading files and games from the Internet. • I can post positive comments online • I understand why it is important for me to use and view only the apps, websites or films that are appropriate to my age • I can use a keyboard, mouse, trackpad and touchscreen with more confidence.	• I choose a secure password when I am using a website. • I can talk about the ways I can protect myself and my friends from harm online. • I use the safety features of websites as well as reporting concerns to an adult. • I know that anything I post online can be seen by others. • I choose websites and games that are appropriate for my age. • I can help my friends make good choices about the time they spend online. • I can talk about why I need to ask a trusted adult before downloading files and games from the Internet. • I comment positively and respectfully online. • I understand why it is important for me to use and view only the apps, websites or films that are appropriate to my age • I can use a keyboard, mouse, trackpad and touchscreen confidently	• I protect my password and other personal information. • I can explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. • I know that anything I post online can be seen, used and may affect others. • I can talk about the dangers of spending too long online or playing a game. • I can explain the importance of communicating kindly and respectfully. • I can discuss the importance of choosing an age-appropriate website or game. • I can explain why I need to protect my computer or device from harm. • I know which resources on the Internet I can download and use. • I understand why it is important for me to use and view only the apps, websites or films that are appropriate to my age • I can use a mouse, trackpad and touchscreen confidently and begin to touch type on a keyboard.	• I protect my password and other personal information. • I can explain the consequences of sharing too much about myself online. • I support my friends to protect themselves and make good choices online, including reporting concerns to an adult. • I can explain the consequences of spending too much time online or on a game. • I can explain the consequences to myself and others of not communicating kindly and respectfully. • I protect my computer or device from harm on the Internet. • I understand why it is important for me to use and view only the apps, websites or films that are appropriate to my age. • I can use a mouse, trackpad and touchscreen confidently and can type on a keyboard at a reasonable rate of speed and accuracy.

			2. ***Programming/Coding***			
Use ICT to sort and sequence objects on a screen or interactive whiteboard. Produce simple pictograms with help.	• I can give instructions to my friend and follow their instructions to move around. • I can describe what happens when I press buttons on a robot. • I can press the buttons in the correct order to make my robot do what I want. • I can describe what actions I will need to do to make something happen and begin to use the word algorithm. • I can begin to predict what will happen for a short sequence of instructions. • I can begin to use software/apps to create movement and patterns on a screen. • I can use the word debug when I correct mistakes when I program.	• I can give instructions to my friend (using forward, backward and turn) and physically follow their instructions. • I can tell you the order I need to do things to make something happen and talk about this as an algorithm. • I can program a robot or software to do a particular task. • I can begin to understand the vocabulary and importance of sequence and repetition. • I can look at my friend's program and tell you what will happen. • I can use programming software to make objects move around the screen. • I can watch a program execute and spot where it goes wrong so that I can debug it.	• 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 understand and can use basic selection and repetition in algorithms. • I can create and describe the algorithm I will need for a simple task. • I can detect a problem in an algorithm which could result in unsuccessful programming.	• I can use logical thinking to solve an open-ended problem by breaking it up into smaller parts. • I can understand and can use selection (as well as sequence and repetition) in algorithms and programming. • I can use inputs to determine or trigger 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 recognise that using algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.	• 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 understand and use variables within my programming. • I can use input to alter and affect my variables. • I can confidently use sequence, selection and repetition within my algorithms and programming. • I can design, build and program physical systems using inputs, process and outputs. • 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 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 (and understand why 'forever loops' can be inappropriate). • 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.
			3. Multimedia			
Interact and explore their environment using a range of multimedia equipment, including digital cameras, video cameras, microscopes etc. This could also include the use of tablets e.g. iPad to capture still and moving images.	• I can be creative with different technology tools. • I can use technology to create and present my ideas. • I can use the keyboard or a word bank on my device to enter text. • I can save information in a special place and retrieve it again.	• I can use technology to organise and present my ideas in different ways. • I can use the keyboard on my device to add, delete and space text for others to read. • I can tell you about an online tool that will help me to share my ideas with other people. • I can save and open files on the device I use.	• I can create different effects with different 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.	• I can use photos, video and sound to create an 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.	• I can use text, photo, sound and video editing tools to refine my 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.	• I can talk about audience, atmosphere 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.
			4. Handling Data			
Collect information, e.g., by taking photographs or collecting objects. Use ICT to sort and sequence objects on a screen or interactive whiteboard.	• I can talk about the different ways in which information can be shown. • I can use technology to collect information, including photos, video and sound. • I can sort different kinds of information	• I talk about the different ways I use technology to collect information, including a camera, microscope or sound recorder. • I can make and save a chart or graph using the data I collect. • I can talk about	• 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 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	• 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 using	• 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.

	and present it to others. • I can add information to a pictograph and talk to you about what I have found out.	the data that is shown in my chart or graph. • I am starting to understand a branching database. • I can tell you what kind of information I could use to help me investigate a question.	• I can add to a database. • I can make a branching database. • I can use a data logger to monitor changes and can talk about the information collected.	data to my friends. • I can use a data logger to record and share my readings with my friends.	different operators to refine my search. • I can talk about mistakes in data and suggest how it could be checked.	• I can interpret the data I collect. • I can present the data I collect in an appropriate way. • I use the skills I have developed to create, manipulate and interrogate a Spreadsheet.
			5. Information technology			
Use a shortcut such as an icon on the desktop to navigate to a specific website. Explore a teacher-selected website to find a desired page, using hyperlinks and navigation buttons.	• I can recognise the ways we use technology in our classroom. • I can recognise ways that technology is used in my home and community. • I can use links to websites to find information. • I can begin to identify some of the benefits of using technology.	• I can tell you why I use technology in the classroom. • I can tell you why I use technology in my home and community. • I am starting to understand that other people have created the information I use. • I can identify benefits of using technology including finding information, creating and communicating. • I can talk about the differences between the Internet and things in the physical world.	• 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 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 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.
			Non-Negotiables			
	Create an instructional algorithm Understand that an algorithm is a series of instructions Test program and correct errors	Write own narrative algorithms, using a list of commands, with precision and clarity Create programs to be executed on a programmable toy Understand that an algorithm is a set of instructions which is implemented as a program Use the term 'debug'	Predict outcomes, test and evaluate Understand and explore a range of commands Recognise that different sequences can achieve the same outcome Recognise repeat in a sequence Explore input and output forms	Plan an algorithm to achieve a specific outcome Step through program sequences to identify errors Break a problem into smaller parts in order to build a procedure/program Use a range of resources for programming	recognise that problems should be broken into smaller parts in order to achieve a solution effectively; Use if…… then…… Sense change to begin an action; Begin to understand the need for a variable in a program; Change an input and observe and output; Recognise that effective algorithms and procedures are important for achieving required outcomes; Understand that logical reasoning enables detection and then correction of errors; Know the difference between an algorithm and a program. Use a variety of commands to create an algorithm;	break problems into smaller parts to achieve a solution; • design and write programs to answer own questions; • test, evaluate and refine; • understand when a variable is needed in a program; • detect and correct errors and identify the errors in the original algorithm; • change variables to alter outcomes; • Explore other coding languages
Composite Curriculum Goals						
Autumn *Use age appropriate software on IWB to show ability to use interactive technology.* *Spring* *Set and use a programmable toy (Beebot)to follow a course.* *Summer* *To produce a piece of computer work on a desktop computer.*	Autumn Safely set a password and log in to an account. Grouping and sorting objects online. Creating a pictogram to represent data. Identify where keys are and their functions. Spring Programme to follow directions. Create an animated story.	***Autumn Term*** *Basic Computer skills (For example - Logging on and off/ opening and saving work independently.) Creating algorithms for moving a turtle. - Saved within Purple Mash.* ***Spring Term*** *Become reporters and explain what happened and why the titanic sank. What happened to the Titanic? - Saved*	***Autumn*** *Create an E-Safety poster using online literacy.* ***Spring*** *Create an Italian themed game on Scratch.* ***Summer*** *Create a branching database linked to animals.*	***Autumn Term*** *Create a quiz on the Roman Empire using Scratch (basic algorithms)* *Create a game using scratch (coding)* ***Spring Term*** *Use an algorithm to help solve a problem in another curriculum subject* ***Summer Term*** *Use hyperlinks to link resources using the world wide web.*	***Autumn Term*** *Publishing a game made in scratch* ***Spring Term*** *Developing and publishing a web page.* ***Summer Term*** *Designing a virtual gallery to display virtual 3D art.*	***Autumn Term*** *Publishing a Python text based adventure.* ***Spring Term*** *Check, interpret, manipulate and publish data.* ***Summer Term*** *Designing a virtual product and produce using a 3D printer.*

	Summer Write a piece of code. Create a spreadsheet online. Explore technology outside of school.	*on Purple Mash* ***Summer Term*** *Create an E Safety poster – How can we keep safe online?*				

Vocabulary

St Augustine's Computing Vocabulary Progression Reception – Yr6

Computing is often split into 3 different categories: Digital Literacy (**E-Safety**), Computer Science and InformationTechnology (inc Multimedia & Data Handling). Below is the vocabulary progression from Reception until Year 6 alongside the programmes of study.

Digital Literacy (E-safety)

At the end of Key Stage 1 children can:

 use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Digital Literacy (E-safety)

At the end of Key Stage 2 children can:

 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Reception	Year 1	Year 2	Year 3 and Year 4	Year 5 and Year 6
Choices Internet Website	Rules Online Private information Email	Appropriate/ inappropriate sites Cyber-bullying Digital footprint Keyword searching	E-safety rules Secure passwords Report abuse button Gaming Blogs	Responsible online communication Informed choices Virus threats Blogs Messaging

Computer Science

At the end of Key Stage 1 children can:

 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

 create and debug simple programs

 use logical reasoning to predict the behaviour of simple programs

Computer Science

At the end of Key Stage 2 children can:

 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

 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Equipment Buttons Movement	Instructions Buttons Robots Patterns Program Algorithm	Forward Backward Right-angle turn Algorithm Sequence Debug Predict	Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming	Type + edit logo commands Sensors Open-ended problems Bugs in programs Complex programming	Explore procedures Refine procedures Variable Hardware + software control Change inputs Different outputs Articulate solutions Commands	Predicting outputs Plan, program, test & review a program Program writing Control mimics + devices Sensors Measure input Create variables Link errors

Information Technology inc Data Handling in red and Multimedia in green

Information Technology inc Data Handling in red and Multimedia in green

At the end of Key Stage 2 children can:

At the end of Key Stage 1 children can: • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school			• 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 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, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information			
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Technology Share Create Internet Collect Set of photos Count Organise Store Screen Mouse Images Keyboard Paint	Purpose Online tools Communicate Photographs Video Sound Data Pictogram Digitally Videos Camera stills Sounds Image bank Word bank Space bar	Information sources Communication Purposes Website content Capturing moments Magnified images Questions Data collection Graphs Charts Save Retrieve Manipulate Paint effects Templates Animation Documents Index finger typing Enter/return Caps lock Backspace	School network Devices Computer parts Collaborate Appropriate online communication Search tools Appropriate websites Owner Questioning Database Construct Contribute Recording data Data logger Present data Multimedia Presentations Alignment Brush size Repeats Reflections Green screening Amend Copy/Paste	Different networks Information collection Reliability Owners Database creation Database searches Inaccurate data Creating + modifying Specific purpose Photo modifying Keyboard shortcuts Bullet points Spell check Constructive feedback	Computing devices Internet parts Collaboration Responsibility Searching strategies Webpages Spreadsheets Complex searches (and/or: </>) Problem solving Present answers Analyse information Question data Interpret Online sharing Multimedia effects Multimedia modification Transitions Hyperlinks Editing tools Refining Online sharing	Information movement Connecting devices Different audiences Research strategies Search result rankings Acknowledge resources Generate Process Interpret Store Present information Plausibility Appropriate data tool Interrogate Investigations Appropriate online tools Audience Atmosphere Structure Copyright Information collection HTML code Storing
Visits/Visitors and websites						
Visitors **The codes show**			**Visits**		**Websites** **Scratch, Barefoot computing** **Code.org, Stem.org**	

Computing Assessment Criteria

Key	Programming	Using Technology	Understanding Technology

Year 1

- I know that an algorithm is an instruction.
- I can create a simple set of algorithms (instructions) to control programmable devices or objects on screen.
- I can recognise if I have made a mistake in my instructions and try to rectify it.
- I can use technology purposefully to create digital content e.g. making an E Book or a photo collage.
- I understand that I can save and store my work for later using technology.
- I understand that I can use technology to collect things like information or pictures.
- I am aware of some safety issues related to using technology such as; the use of passwords on computer networks, mobile phones and school gates.
- I can recognise common uses of information technology beyond school.

Key	Programming	Using Technology	Understanding Technology

Year 2

- I understand that programs execute (work) by following sets of precise instructions called algorithms
- I can correct my errors and solve problems on simple programs and know that this is called debugging
- I can use logical reasoning to predict the behaviour of simple programs
- I can use technology purposefully to organise (save, store and retrieve) digital content.
- I can use technology purposefully to manipulate digital content e.g making a word cloud, collecting and recording data.
- I can send an email
- I understand how to safely and respectfully use technology and I am aware of some E-safety measures such as, keeping my personal data private.
- I understand where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Key	Programming	Using Technology	Understanding Technology

Year 3

- I can write programs that accomplish specific goals e.g. writing an app or programming pro-bot
- I can use sequence in programs
- I can search technologies effectively to collect digital material.
- I can use a variety of software to accomplish given goals e.g Making a digital video, creating a survey
- I can use a variety of software to present information e.g. Making a digital video, Creating a survey
- I can describe how to use technology safely and responsibly and I am aware of acceptable and unacceptable behaviour.
- I can identify a range of ways to report concerns about contact e.g. CEOP 'Thinkyouknow' website, adults in school
- I can talk about a simple computer network

Key	Programming	Using Technology	Understanding Technology

Year 4

- I can design programs that accomplish specific goals e.g. Using SCRATCH to make a simple platform game
- I can debug programs that accomplish specific goals
- I can use more complex commands in my coding such as repetition and using various forms of input and output in programs
- I can use a variety of software to accomplish given goals e.g. producing a piece of music or collecting data
- I can design and create musical content
- I can use and combine software to collect, analyse, evaluate and present data e.g using data loggers
- I can understand the opportunities computer networks offer for communication
- I can identify a range of ways to report concerns about content and contact
- I can use technology respectfully
- I can recognise some acceptable/unacceptable behaviour.

Key	Programming	Using Technology	Understanding Technology

Year 5

- I can solve problems by decomposing code into smaller parts.
- I can design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.
- I can use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
- I can select a variety of software to accomplish given goals
- I can use and combine software to collect, analyse, evaluate and present data
- I can understand computer networks including the internet and how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication e.g. write a wiki
- I know a range of ways to report concerns about content and contact.
- I can use technology safely, respectfully and responsibly.
- I can recognise acceptable/unacceptable behaviour.

Key	Programming	Using Technology	Understanding Technology

Year 6

- I can use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- I can use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
- I appreciate how results are selected and ranked when using search technologies and can be discerning in evaluating digital content.
- I can select, use and combine internet services
- I can select and use and combine a variety of software on a range of digital devices to accomplish given goals
- I understand the opportunities computer networks offer for communication
- I can identify a range of ways to report concerns about content and contact
- I recognise acceptable/unacceptable behaviour