Heene Church of England Primary School

'Together in faith, we love, grow and learn'

COMPUTING

National Curriculum Requirement

Early Years	Key Stage 1	Key Stage 2
There is no current requirement for Early Years children to learn about computing. However the children at our school will be using different coding equipment (Coding caterpillars) to learn about computing as well as having use of iPads to navigate.	Pupils should be taught to: - 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 - use technology purposefully to create, organise, store, manipulate and retrieve digital content - recognise common uses of information technology beyond school - 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.	Pupils should be taught to: - 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 - 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 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

PROGRESSION –

	EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Autumn Term 1st 2 weeks	**Internet safety** NA as phased entry and do internet safety with the school in February	**Internet safety** Philosophy sessions – Hectors World episode 1 (Session 1), Hectors World episode 2 (Session 2). Each to be followed by discussions. Knowing how to use google images, log on and off the network, emails – See knowledge organiser.	**Internet safety** Philosophy sessions – Hectors World episodes 3&4 (Session 1), Hectors World episode 5&6 (Session 2). Each to be followed by discussions. Looking at virus', what to do if something upsets me – See knowledge organiser.	**Internet safety** Children to understand about phishing, what makes a strong password, privacy settings and spotting what is truthful or not online. – See knowledge organiser. Children to have any time to explore Interland	**Internet safety** How to spot and report cyberbullying, using a search engine effectively, spotting false information online, know how to be a good digital citizen. – See knowledge organiser. Children to have any time to explore Interland	**Internet safety** To understand about plagiarism and copyright laws, know age restrictions for different social media, age 10 can have criminal record and discuss taking inappropriate photographs. – See knowledge organiser. Children to have any time to explore Interland	**Internet safety** Knowing how to keep safe on social media, posting to youtube is viewed by everyone, setting, understand digital footprint, age 10 can have criminal record and discuss taking inappropriate photographs. – See knowledge organiser. Children to have any time to explore Interland
Autumn Term 1- **Systems and Networks**	**E-Safety** ✓ not putting their names on computer games ✓ not talking to people online	**Technology Around Us** ✓ identify technology ✓ identify a computer and its main parts ✓ use a mouse in different ways ✓ use a keyboard to type on a computer ✓ use a keyboard to edit text ✓ create rules for using technology responsibly	**Information technology Around Us** ✓ recognise the uses and features of information technology ✓ identify the uses of information technology in the school ✓ identify information technology beyond school ✓ explain how information technology helps us ✓ explain how to use information technology safely ✓ recognise that choices are made when using information technology	**Connecting Computers** ✓ explain how digital devices function ✓ identify input and output devices ✓ recognise how digital devices can change the way that we work ✓ explain how a computer network can be used to share information ✓ explore how digital devices can be connected ✓ recognise the physical components of a network	**The internet** ✓ describe how networks physically connect to other networks ✓ recognise how networked devices make up the internet ✓ outline how websites can be shared via the World Wide Web (WWW) ✓ describe how content can be added and accessed on the World Wide Web (WWW) ✓ recognise how the content of the WWW is	**Systems and Searching** ✓ explain that computers can be connected together to form systems ✓ recognise the role of computer systems in our lives ✓ identify how to use a search engine ✓ describe how search engines select results ✓ explain how search results are ranked ✓ recognise why the order of results is important, and to whom	**Communication and Collaboration** ✓ explain the importance of internet addresses ✓ recognise how data is transferred across the internet ✓ explain how sharing information online can help people to work together ✓ evaluate different ways of working together online ✓ recognise how we communicate using technology

					✓ created by people ✓ evaluate the consequences of unreliable content		✓ evaluate different methods of online communication
Autumn Term 2- **Creating Media**		**Digital painting** ✓ describe what different freehand tools do ✓ use a shape tool and the line tools ✓ make careful choices when painting a digital picture ✓ explain why I chose the tool I used ✓ use a computer on my own to paint a picture ✓ compare painting a picture on a computer and on paper	**Digital photography** ✓ use a digital device to take a photograph ✓ make choices when taking a photograph ✓ describe what makes a good photograph ✓ decide how photographs can be improved ✓ use tools to change an image ✓ recognise that photos can be changed	**Stop-frame animation** ✓ explain that animation is a sequence of drawings or photographs ✓ relate animated movement with a sequence of images ✓ plan an animation ✓ identify the need to work consistently and carefully ✓ review and improve an animation ✓ evaluate the impact of adding other media to an animation	**Audio production** ✓ identify that sound can be recorded ✓ explain the audio recordings can be edited ✓ recognise the different parts of creating a podcast project ✓ apply audio editing skills independently ✓ combine audio to enhance my podcast project ✓ evaluate the effective use of audio	**Video production** ✓ explain what makes a video effective ✓ use a digital device to record video ✓ capture video using a range of techniques ✓ create a storyboard ✓ identify that video can be improved through reshooting and editing ✓ consider the impact of the choices made when making and sharing a video	**Web page creation** ✓ review an existing website and consider its structure ✓ plan the features of a web page ✓ consider the ownership and use of images (copyright) ✓ recognise the need to preview pages ✓ outline the need for a navigation path ✓ recognise the implications of linking to content owned by other people
Spring Term1 – Programming	**Software and hardware** ✓ log on and off numblocks using keyboard and touchscreen ✓ access to ipads ✓ scanning QR codes ✓ taking photos	**Moving a robot** ✓ explain what a given command will do ✓ act out a given word ✓ combine forwards and backwards commands to make sequences ✓ combine four direction commands to make sequences	**Robot algorithms** ✓ describe a series of instructions as a sequence ✓ explain what happens when we change the order of instructions ✓ use logical reasoning to predict the outcome of a program (series of commands) ✓ explain that programming projects can have code and artwork	**Sequencing sound** ✓ explore a new programming environment ✓ identify that commands have an outcome ✓ explain that a program has a start ✓ recognise that a sequence of commands can have an order ✓ change the	**Repetition in shapes** ✓ identify that accuracy in programming is important ✓ create a program in a text-based language ✓ explain what 'repeat' means ✓ modify a count-controlled loop	**Selection in physical computing** ✓ control a simple circuit connected to a computer ✓ write a program that includes count-controlled loops ✓ explain that a loop can stop when a condition is met ✓ explain that a	**Variables in games** ✓ Define a 'variable' as something that is changeable ✓ Explain why a variable is used in a program ✓ Choose how to improve a game by using variables ✓ Design a project that builds on a given example ✓ Use my design to

		✓ plan a simple program ✓ find more than one solution to a problem	✓ design an algorithm ✓ create and debug a program that I have written	appearance of my project ✓ create a project from a task description	to produce a given outcome ✓ decompose a task into small steps ✓ create a program that uses count-controlled loops to produce a given outcome	loop can be used to repeatedly check whether a condition has been met ✓ design a physical project that includes selection ✓ create a program that controls a physical computing project	create a project ✓ Evaluate my project
Spring Term 2 – **Data and Information**		**Grouping data** ✓ label objects ✓ identify that objects can be counted ✓ describe objects in different ways ✓ count objects with the same properties ✓ compare groups of objects ✓ answer questions about groups of objects	**Pictograms** ✓ recognise that we can count and compare objects using tally charts ✓ recognise that objects can be represented as pictures ✓ create a pictogram ✓ select objects by attribute and make comparisons ✓ recognise that people can be described by attributes ✓ explain that we can present information using a computer	**Branching databases** ✓ create questions with yes/no answers ✓ identify the object attributes needed to collect relevant data ✓ create a branching database ✓ explain why it is helpful for a database to be well structured ✓ plan the structure of a branching database ✓ independently create an identification tool	**Data logging** ✓ explain that data gathered over time can be used to answer questions ✓ use a digital device to collect data automatically ✓ explain that a data logger collects 'data points' from sensors over time ✓ recognise how a computer can help us analyse data ✓ identify the data needed to answer questions ✓ use data from sensors to answer questions	**Flat-file databases** ✓ use a form to record information ✓ compare paper and computer-based databases ✓ outline how grouping and then sorting data allows us to answer questions ✓ explain that tools can be used to select specific data ✓ explain that computer programs can be used to compare data visually ✓ apply my knowledge of a database to ask and answer real-world	**Introduction to spreadsheets** ✓ create a data set in a spreadsheet ✓ build a data set in a spreadsheet ✓ explain that formulas can be used to produce calculated data ✓ apply formulas to data, including duplicating ✓ create a spreadsheet to plan an event ✓ choose suitable ways to present data

							questions
Summer Term 1 – **Creating Media**	**Coding** ✓ Caterpillars and Beebots ✓ scanning QR codes	**Digital writing** ✓ use a computer to write ✓ add and remove text on a computer ✓ identify that the look of text can be changed on a computer ✓ make careful choices when changing text ✓ explain why I used the tools that I chose ✓ compare typing on a computer to writing on paper	**Digital music** ✓ say how music can make us feel ✓ identify that there are patterns in music ✓ experiment with sound using a computer ✓ use a computer to create a musical pattern ✓ create music for a purpose ✓ review and refine our computer work	**Desktop publishing** ✓ recognise how text and images convey information ✓ recognise that text and layout can be edited ✓ choose appropriate page settings ✓ add content to a desktop publishing publication ✓ consider how different layouts can suit different purposes ✓ consider the benefits of desktop publishing	**Photo editing** ✓ explain that the composition of digital images can be changed ✓ explain that colours can be changed in digital images ✓ explain how cloning can be used in photo editing ✓ explain that images can be combined ✓ combine images for a purpose ✓ evaluate how changes can improve an image	**Introduction to vector graphics** ✓ identify that drawing tools can be used to produce different outcomes ✓ create a vector drawing by combining shapes ✓ use tools to achieve a desired effect ✓ recognise that vector drawings consist of layers ✓ group objects to make them easier to work with ✓ apply what I have learned about vector drawings	**3D modelling** ✓ recognise that you can work in three dimensions on a computer ✓ identify that digital 3D objects can be modified ✓ recognise that objects can be combined in a 3D model ✓ create a 3D model for a given purpose ✓ plan my own 3D model ✓ create my own digital 3D model
Summer Term 2 – **Programming**		**Programming animations** ✓ choose a command for a given purpose ✓ show that a series of commands can be joined together ✓ identify the effect of	**Programming quizzes** ✓ explain that a sequence of commands has a start ✓ explain that a sequence of commands has an outcome ✓ create a program using a given design ✓ change a given design ✓ create a program using my own design	**Events and actions in programs** ✓ explain how a sprite moves in an existing project ✓ create a program to move a sprite in four directions ✓ adapt a program to a new context ✓ develop my program by adding	**Repetition in games** ✓ develop the use of count-controlled loops in a different programming environment ✓ explain that in programming there are	**Selection in quizzes** ✓ explain how selection is used in computer programs ✓ relate that a conditional statement connects a condition to an outcome ✓ explain how	**Sensing movement** ✓ create a program to run on a controllable device ✓ explain that selection can control the flow of a program ✓ update a variable with a user input ✓ use an

	- changing a value ✓ explain that each sprite has its own instructions ✓ design the parts of a project ✓ use my algorithms to create a programme	✓ decide how my project can be improved	- features ✓ identify and fix bugs in a program ✓ design and create a maze-based challenge	- infinite loops and count-controlled loops ✓ develop a design that includes two or more loops which run at the same time ✓ modify an infinite loop in a given program ✓ design a project that includes repetition ✓ create a project that includes repetition	- selection directs the flow of a program ✓ design a program which uses selection ✓ create a program which uses selection ✓ evaluate my program	- conditional statement to compare a variable to a value ✓ design a project that uses inputs and outputs on a controllable device ✓ develop a program to use inputs and outputs on a controllable device

	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Computing systems and networks	**Technology around us** Recognising technology in school and using it responsibly.	**Information technology around us** Identifying IT and how its responsible use improves our world in school and beyond.	**Connecting computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	**Systems and searching** Recognising IT systems in the world and how some can enable searching on the internet.	**Communication and collaboration** Exploring how data is transferred by working collaboratively online.
Creating media	**Digital painting** Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.

Digital writing | **Digital photography** Capturing and changing digital photographs for different purposes.

Digital music Using a computer as a tool to explore rhythms and | **Stop-frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story.

Desktop publishing | **Audio production** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.

Photo editing | **Video production** Planning, capturing, and editing video to produce a short film.

Introduction to vector graphics Creating images in a drawing program by | **Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.

3D modelling |

	Using a computer to create and format text, before comparing to writing non-digitally.	melodies, before creating a musical composition.	Creating documents by modifying text, images, and page layouts for a specified purpose.	Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	using layers and groups of objects.	Planning, developing, and evaluating 3D computer models of physical objects.
Data and information	**Grouping data** Exploring object labels, then using them to sort and group objects by properties.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer.	**Branching databases** Building and using branching databases to group objects using yes/no questions.	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	**Flat-file databases** Using a database to order data and create charts to answer questions.	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data.
Programming	**Moving a robot** Writing short algorithms and programs for floor robots, and predicting program outcomes. **Programming animations** Designing and programming the movement of a character on screen to tell stories.	**Robot algorithms** Creating and debugging programs, and using logical reasoning to make predictions. **Programming quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.	**Sequencing sounds** Creating sequences in a block-based programming language to make music. **Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes. **Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller. **Selection in quizzes** Exploring selection in programming to design and code an interactive quiz.	**Variables in games** Exploring variables when designing and coding a game. **Sensing movement** Designing and coding a project that captures inputs from a physical device.