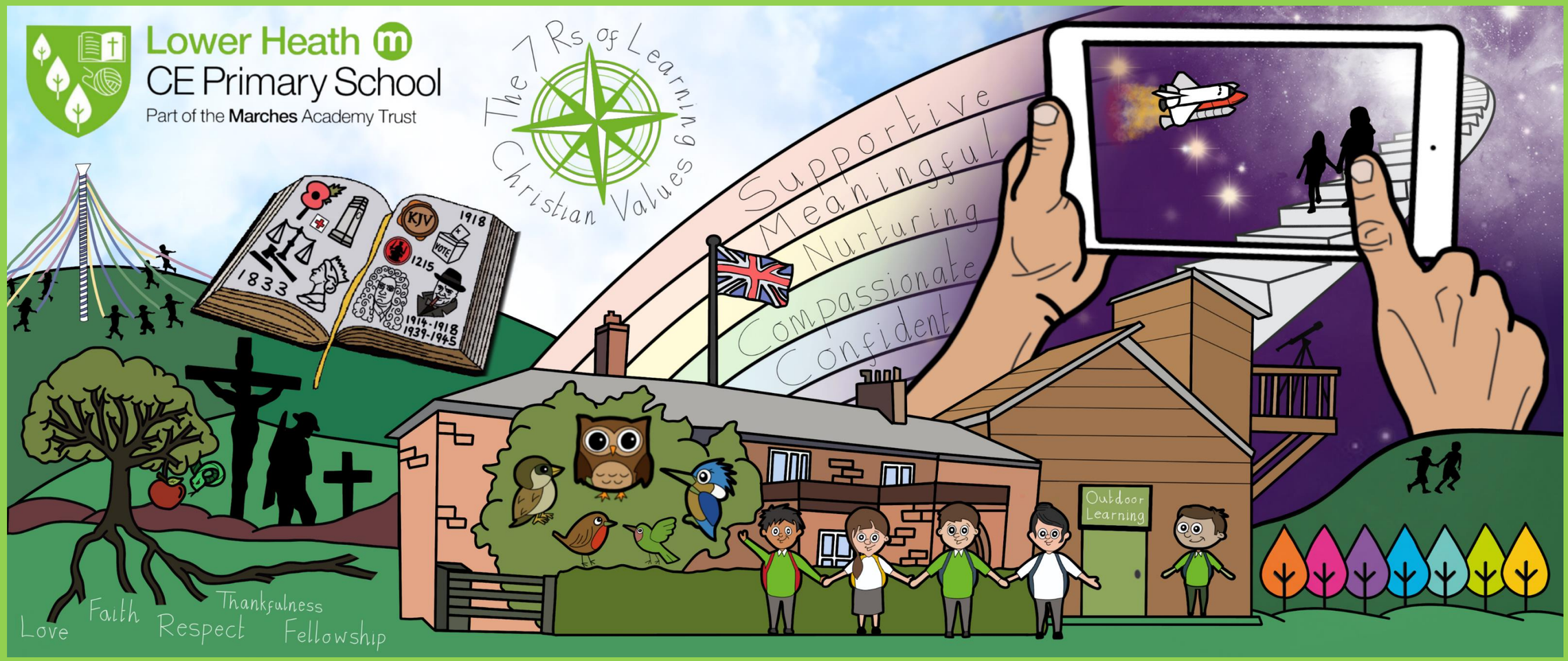

Computing

Progression of Knowledge and Skills

EYFS-Year 6

EYFS
Reception

Informed by new Development Matters (2020) publication

Strand	Computer Science	Digital Literacy	Information Technology	Online Safety
ELG	**ELG** Understanding: children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events. **ELG** Moving and handling: children show good control and co-ordination in large and small movements. They move confidently in a range of ways, safely negotiating space.	**ELG** Exploring and using media and materials: children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. **ELG** Being imaginative: children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role-play and stories.	**ELG** People and communities: children talk about past and present events in their own lives and in the lives of family members. They know that other children don't always enjoy the same things and are sensitive to this. They know about similarities and differences between themselves and others, and among families, communities and traditions. **ELG** Technology: children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	**ELG** Self-confidence and self-awareness: children are confident to try new activities and say why they like some activities more than others. They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities. They say when they do or don't need help. **ELG** Managing feelings and behaviour: children talk about how they and others show feelings, talk about their own and others' behaviour, and its consequences, and know that some behaviour is unacceptable. They work as part of a group or class and understand and follow the rules. They adjust their behaviour to different situations and take changes of routine in their stride.
What might this look like in the EYFS?	Children in Early Years are already immersed in a programmed world. They experience it every day of their lives when the doors at the supermarket open automatically when they approach, the hand drier starts when they place their hands underneath the price of an item shows as you scan the streetlights come on automatically when it gets dark. In the EYFS, continuous provision draws on these common uses of control technology for children to experience first-hand and to explore their uses through play. Additional experiences might also include: 'programming' friends by telling them how to move around like a robot or making jam sandwiches in maths, use of control toys like remote control cars, BeeBots or apps on iPads	Our youngest children are supported as they explore digital apparatus with discussion about what it does, how it works and how to use it safely. Children in Early Years will explore mark making programs on screens, tablets or interactive whiteboard to experiment and communicate their ideas. They will Interact with adults and their peers and explore their environment using multimedia equipment, including cameras, microscopes, iPads and visualisers to capture still and moving images. With help, they will play back their captured recordings, demonstrating confidence and increasingly in control. They will be encouraged to explore ways of making and listening to sounds using simple programs, apps and devices, e.g. talking postcards and age appropriate apps	Children's natural curiosity has always driven them to develop an understanding of the world around them and this is no different when it comes to understanding technology; both how it works and what it can do for us. From their first, early experiences with technology, pupils begin to make sense of how it works and the opportunities it can provide. Children's experiences in this area include exploring: the technology they encounter at home and school (e.g. role play toys, photocopiers, iPads etc.) how technology has changed over time and how it differs across cultures by sharing artefacts, photos and videos, and asking others. (Links to history)	It is important for children to learn to be e-safe from an early age. With the very youngest children, many of the key online safety messages will be conveyed through stories, guided use, continuous provision and adult modelling in the school. Additionally, and importantly, this will be alongside and with the involvement of parents and carers at home. Listen to young children talking about their online world and use this overheard talk to engage with them and find out more about their practice and behaviour

Key Stage 1

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.

YEAR	COMPUTING SYSTEMS & NETWORKS	CREATING MEDIA	DATA & INFORMATION	PROGRAMMING
1	**Technology around us** To identify technology To identify a computer and its main parts To use a mouse in different ways To use a keyboard to type To use the keyboard to edit text To create rules for using technology responsibly	**Digital painting** To describe what different freehand tools do To use the shape tool and the line tools To make careful choices when painting a digital picture To explain why I chose the tools I used To use a computer on my own to paint a picture To compare painting a picture on a computer and on paper **Digital writing** To use a computer to write To add and remove text on a computer To identify that the look of text can be changed on a computer To make careful choices when changing text To explain why I used the tools that I chose To compare writing on a computer with writing on paper	**Grouping data** To label objects To identify that objects can be counted To describe objects in different ways To count objects with the same properties To compare groups of objects To answer questions about groups of objects	**Moving a robot** To explain what a given command will do To act out a given word To combine forwards and backwards commands to make a sequence To combine four direction commands to make sequences To plan a simple program To find more than one solution to a problem **Introduction to animation** To choose a command for a given purpose To show that a series of commands can be joined together To identify the effect of changing a value To explain that each sprite has its own instructions To design the parts of a project To use my algorithm to create a program
2	**Information technology around us** To recognise the uses and features of information technology To identify information technology in the home To identify information technology beyond school To explain how information technology benefits us To show how to use information technology safely To recognise that choices are made when using information technology	**Digital photography** To know what devices can be used to take photographs To use a digital device to take a photograph To describe what makes a good photograph To decide how photographs can be improved To use tools to change an image To recognise that images can be changed **Making music** To say how music can make us feel To identify that there are patterns in music To describe how music can be used in different ways To show how music is made from a series of notes To create music for a purpose To review and refine our computer work	**Pictograms** To recognise that we can count and compare objects using tally charts To recognise that objects can be represented as pictures To create a pictogram To select objects by attribute and make comparisons To recognise that people can be described by attributes To explain that we can present information using a computer	**Robot algorithms** To describe a series of instructions as a sequence To explain what happens when we change the order of instructions To use logical reasoning to predict the outcome of a program (series of commands) To explain that programming projects can have code and artwork To design an algorithm To create and debug a program that I have written **Introduction to quizzes** To explain that a sequence of commands has a start To explain that a sequence of commands has an outcome To create a program using a given design To change a given design To create a program using my own design To decide how my project can be improved

Key Stage 2

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.

YEAR	COMPUTING SYSTEMS & NETWORKS	CREATING MEDIA	DATA & INFORMATION	PROGRAMMING
3	**Connecting computers** To explain how digital devices function To identify input and output devices To recognise how digital devices can change the way we work To explain how a computer network can be used to share information To explore how digital devices can be connected To recognise the physical components of a network	**Stop-frame animation** To explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan an animation To identify the need to work consistently and carefully To review and improve an animation To evaluate the impact of adding other media to an animation **Desktop publishing** To recognise how text and images convey information To recognise that text and layout can be edited To choose appropriate page settings To add content to a desktop publishing publication To consider how different layouts can suit different purposes To consider the benefits of desktop publishing	**Branching databases** To create questions with yes/no answers To identify the object attributes needed to collect relevant data To create a branching database To identify objects using a branching database To explain why it is helpful for a database to be well structured To compare the information shown in a pictogram with a branching database	**Sequence in music** To explore a new programming environment I can identify that each sprite is controlled by the commands I choose To explain that a program has a start To recognise that a sequence of commands can have an order To change the appearance of my project To create a project from a task description **Events and actions** To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To adapt a program to a new context To develop my program by adding features To identify and fix bugs in a program To design and create a maze-based challenge
4	**The internet** To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web To describe how content can be added and accessed on the World Wide Web To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content	**Audio editing** To identify that sound can be digitally recorded To use a digital device to record sound To explain that a digital recording is stored as a file To explain that audio can be changed through editing To show that different types of audio can be combined and played together To evaluate editing choices made **Photo editing** To explain that digital images can be changed To change the composition of an image To describe how images can be changed for different uses To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image	**Data logging** To explain that data gathered over time can be used to answer questions To use a digital device to collect data automatically To explain that a data logger collects 'data points' from sensors over time To use data collected over a long duration to find information To identify the data needed to answer questions To use collected data to answer questions	**Repetition in shapes** To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome To decompose a program into parts To create a program that uses count-controlled loops to produce a given outcome **Repetition in games** To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count controlled loops To develop a design which includes two or more loops which run at the same time To modify an infinite loop in a given program To design a project that includes repetition To create a project that includes repetition To decide how my project can be improved

YEAR	COMPUTING SYSTEMS & NETWORKS	CREATING MEDIA	DATA & INFORMATION	PROGRAMMING
5	**Sharing information** To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together To contribute to a shared project online To evaluate different ways of working together online	**Video editing** To recognise video as moving pictures, which can include audio To identify digital devices that can record video To capture video using a digital device To recognise the features of an effective video To identify that video can be improved through reshooting and editing To consider the impact of the choices made when making and sharing a video **Vector drawing** To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapes To use tools to achieve a desired effect To recognise that vector drawings consist of layers To group objects to make them easier to work with To evaluate my vector drawing	**Flat-file databases** To use a form to record information To compare paper and computer-based databases To outline how grouping and then sorting data allows us to answer questions To explain that tools can be used to select specific data To explain that computer programs can be used to compare data visually To apply my knowledge of a database to ask and answer real-world questions	**Selection in physical computing** To control a simple circuit connected to a computer To write a program that includes count-controlled loops To explain that a loop can stop when a condition is met, eg number of times To conclude that a loop can be used to repeatedly check whether a condition has been met To design a physical project that includes selection To create a controllable system that includes selection **Selection in games** To explain how selection is used in computer programs To relate that a conditional statement connects a condition to an outcome To explain how selection directs the flow of a program To design a program which uses selection To create a program which uses selection To evaluate my program
6	**Communication** To identify how to use a search engine To describe how search engines select results To describe how search engines select results To explain how search results are ranked To recognise why the order of results is important, and to whom To recognise how we communicate using technology To evaluate different methods of online communication	**Web page creation** To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people **3D modelling** To use a computer to create and manipulate three-dimensional (3D) digital objects To compare working digitally with 2D and 3D graphics To construct a digital 3D model of a physical object To identify that physical objects can be broken down into a collection of 3D shapes To design a digital model by combining 3D objects To develop and improve a digital 3D model	**Spreadsheets** To identify questions which can be answered using data To explain that objects can be described using data To explain that formula can be used to produce calculated data To apply formulas to data, including duplicating To create a spreadsheet to plan an event To choose suitable ways to present data	**Variables in games** To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variables To design a project that builds on a given example To use my design to create a project To evaluate my project **Sensing** To create a program to run on a controllable device To explain that selection can control the flow of a program To update a variable with a user input To use an conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device

Computing Curriculum Map 2 year Rolling Programme: years 1-6

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Years 1/2						
Year A	COMPUTING SYSTEMS AND NETWORKS Technology around us Online Safety	CREATING MEDIA Digital Painting	PROGRAMMING A Moving a robot	DATA AND INFORMATION Grouping data Online Safety	CREATING MEDIA Digital writing Online Safety	PROGRAMMING B Introduction to animation
Year B	COMPUTING SYSTEMS AND NETWORKS Information technology around us Online safety	CREATING MEDIA Digital photography	PROGRAMMING A Robot algorithms	DATA AND INFORMATION Pictograms Online safety	CREATING MEDIA Making music Online safety	PROGRAMMING B Introduction to quizzes
Years 3/4						
YEAR A	COMPUTING SYSTEMS AND NETWORKS Connecting Computers	CREATING MEDIA Stop frame animation Online safety	PROGRAMMING A Sequence in music	DATA AND INFORMATION Branching databases	CREATING MEDIA Desktop publishing Online safety	PROGRAMMING B Events and actions
YEAR B	COMPUTING SYSTEMS AND NETWORKS The internet	CREATING MEDIA Audio editing Online safety	PROGRAMMING A Repetition in shapes	DATA AND INFORMATION Data logging	CREATING MEDIA Photo editing Online safety	PROGRAMMING B Repetition in games
YEAR 5/6						
YEAR A	COMPUTING SYSTEMS AND NETWORKS Sharing information Online safety	CREATING MEDIA Video editing Online safety	PROGRAMMING A Selection in physical computing	DATA AND INFORMATION Flat-file databases	CREATING MEDIA Vector drawing Online safety	PROGRAMMING B Selection in quizzes
YEAR B	COMPUTING SYSTEMS AND NETWORKS Communication Online safety	CREATING MEDIA Web page creation Online safety	PROGRAMMING A Variables in games	DATA AND INFORMATION Spreadsheets	CREATING MEDIA 3D modelling Online safety	PROGRAMMING B Sensing