The Crescent Primary School
Computing Skills Progression Grids

Year 1

	Information Technology	Computer Science	Digital Literacy
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networks work and basic computer programming.	The safe and responsible use of technology, including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I use technology purposefully to create, organise, store, manipulate and retrieve digital content.*	• *I understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.* • *I can create and debug simple programs.* • *I can use logical reasoning to predict the behaviour of simple programs.*	• *I can recognise common uses of information technology beyond school.* • *I can use technology safely and respectfully, keeping personal information private.* • *I can identify where to go for help and support when I have concerns about content or contact on the internet or other online technologies.*

The Crescent Primary Computing Skills and Units

Computing Systems and Networks – Technology Around Us	Creating Media – Digital Painting	Creating Media – Digital Writing	Data and Information – Grouping Data	Programming A – Moving a Robot	Programming B – Introduction to Animation
Learners will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly.	During this unit, learners develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with learners considering their preferences when painting with and without the use of digital devices.	During this unit, learners will develop their understanding of the various aspects of using a computer to create and manipulate text. Learners will become more familiar with using a keyboard and mouse to enter and remove text. Learners will also consider how to change the look of their text, and will be able to justify their reasoning in making these changes.	This unit introduces pupils to data and information. Labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data.	This unit introduces learners to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner.	This unit introduces learners to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.

The Crescent Primary School
Computing Skills Progression Grids

Children will be able: • 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	*Children will be able:* • 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	*Children will be able:* • 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	*Children will be able:* • 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	*Children will be able:* • 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	*Children will be able:* • 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

The Crescent Primary School
Computing Skills Progression Grids

Year 2

	Information Technology	Computer Science	Digital Literacy
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networks work and basic computer programming.	The safe and responsible use of technology, including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I use technology purposefully to create, organise, store, manipulate and retrieve digital content.*	• *I understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.* • *I can create and debug simple programs.* • *I can use logical reasoning to predict the behaviour of simple programs.*	• *I can recognise common uses of information technology beyond school.* • *I can use technology safely and respectfully, keeping personal information private.* • *I can identify where to go for help and support when I have concerns about content or contact on the internet or other online technologies.*

The Crescent Primary Computing Skills and Units

Computing Systems and Networks – IT Around Us	Creating Media – Digital Photography	Creating Media – Making Music	Data and Information – Pictograms	Programming A – Robot Algorithms	Programming B – An Introduction to Quizzes
In this unit, learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly.	During this unit learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real. Following this unit, learners will develop their photo editing skills in Year 4.	During this unit, learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.	During this unit, learners will develop their knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.	During this unit, learners will develop their knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.	During this unit, learners will develop their knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.

The Crescent Primary School
Computing Skills Progression Grids

Children will be able: • 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	*Children will be able:* • To use a digital device to take a photograph • To make choices when taking 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 photos can be changed	*Children will be able:* • 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	*Children will be able:* • 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	*Children will be able:* • 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	*Children will be able:* • 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

The Crescent Primary School
Computing Skills Progression Grids

Year 3			
	Information Technology	**Computer Science**	**Digital Literacy**
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networks work and basic computer programming.	The safe and responsible use of technology, including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I can 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.* • *I can use search technologies effectively.*	• *I can design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.* • *I can solve problems by decomposing them into smaller parts.* • *I can use sequence, selection and repetition in programs.* • *I can 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 understand computer networks including the internet.* • *I understand how the internet can provide multiple services such as the world wide web.* • *I can appreciate how search results are selected and ranked.*	• *I can use technology safely, respectfully and responsibly.* • *I can recognise acceptable and unacceptable behaviour.* • *I can identify a range of ways to report concerns about content and contact.* • *I can be discerning in evaluating digital content.* • *I understand the opportunities networks offer for communication and collaboration.* •

The Crescent Primary School
Computing Skills Progression Grids

The Crescent Primary Computing Skills and Units					
Computing Systems and Networks – Connecting Computers	**Creating Media – Animation**	**Creating Media – Desktop Publishing**	**Data and Information – Branching databases**	**Programming A – Sequencing sounds**	**Programming B – Events and actions in programs**
During this unit, learners will develop their knowledge and understanding of technology by focussing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks. *Children will be able:* • 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	During this unit, learners will develop their knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5. *Children will be able:* • 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	During this unit, learners will develop their knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2. *Children will be able:* • 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 benefitsof desktop publishing	During this unit, learners will develop their understanding of what a branching database is and how to create one. They will gain an understanding of what attributes are and how to use them to sort groups of objects by using yes/no questions. The learners will create physical and on-screen branching databases. *Children will be able:* • To create questions with yes/no answers • To identify the object attributes needed to collect relevant data • To create a branching database • To explain why it is helpful for a database to be well structured • To identify objects using a branching database • To compare the information shown in a pictogram with a branching database	This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks. *Children will be able:* • To explore a programming environment • To identify that commands have an outcome • 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	This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite *Children will be able:* • 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 anew context • To develop my program by adding features • To identify and fix bugs in a program • To design and create a maze-based challenge

The Crescent Primary School
Computing Skills Progression Grids

Year 4			
	Information Technology	**Computer Science**	**Digital Literacy**
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networks work and basic computer programming.	The safe and responsible use of technology, including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I can 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.* • *I can use search technologies effectively.*	• *I can design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.* • *I can solve problems by decomposing them into smaller parts.* • *I can use sequence, selection and repetition in programs.* • *I can 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 understand computer networks including the internet.* • *I understand how the internet can provide multiple services such as the world wide web.* • *I can appreciate how search results are selected and ranked.*	• *I can use technology safely, respectfully and responsibly.* • *I can recognise acceptable and unacceptable behaviour.* • *I can identify a range of ways to report concerns about content and contact.* • *I can be discerning in evaluating digital content.* • *I understand the opportunities networks offer for communication and collaboration.* •

The Crescent Primary School
Computing Skills Progression Grids

The Crescent Primary Computing Skills and Units					
Computing Systems and Networks – The Internet	**Creating Media – Audio editing**	**Creating Media – Photo editing**	**Data and Information – Data logging**	**Programming A – Repetition in shapes**	**Programming B – Repetition in games**
During this unit learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and be given opportunities to explore the World Wide Web for themselves to learn. *Children will be able:* • To describe how networks physically connectto 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	During this unit, learners will initially examine devices capable of recording digital audio, which will include identifying the input device (microphone) and output devices (speaker or headphones) Llearners will explore combining audio with video in the 'Video editing' unit in Year 5. *Children will be able:* • 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	During this unit, learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices. *Children will be able:* • 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	During this unit, learners will develop their knowledge and understanding of data and how it can be collected over time to answer questions. *Children will be able:* • To explain that data gathered over time can be used to answer questions • To use a digital device tocollect data automatically • To explain that a data logger collects 'data points' from sensors over time • To use data collected over a long duration to findinformation • To identify the data needed to answer questions • To use collected data toanswer questions	During this unit, learners will develop their knowledge and understanding of programming. Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. *Children will be able:* • 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 task into small steps • To create a program that uses count-controlled loops to produce a given outcome	During this unit, learners will develop their knowledge and understanding of programming. Learners will explore the concept of repetition in programming using the Scratch environment. Learners look at the difference between count-controlled and infinite loops. *Children will be able:* • 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 that 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

The Crescent Primary School
Computing Skills Progression Grids

Year 5			
	Information Technology	**Computer Science**	**Digital Literacy**
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networks work and basic computer programming.	The safe and responsible use of technology, including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I can 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.* • *I can use search technologies effectively.*	• *I can design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems.* • *I can solve problems by decomposing them into smaller parts.* • *I can use sequence, selection and repetition in programs.* • *I can 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 understand computer networks including the internet.* • *I understand how the internet can provide multiple services such as the world wide web.* • *I can appreciate how search results are selected and ranked.*	• *I can use technology safely, respectfully and responsibly.* • *I can recognise acceptable and unacceptable behaviour.* • *I can identify a range of ways to report concerns about content and contact.* • *I can be discerning in evaluating digital content.* • *I understand the opportunities networks offer for communication and collaboration.*

The Crescent Primary School
Computing Skills Progression Grids

The Crescent Primary Computing Skills and Units					
Computing Systems and Networks – Sharing information	**Creating Media – Vector drawing**	**Creating Media – Video editing**	**Data and Information – Flat-file databases**	**Programming A – Selection in physical computing**	**Programming B – Selection in quizzes**
During this unit, learners will develop their knowledge and understanding of computer systems and how information is transferred between systems and devices. *Children will be able:* • To explain that computers can be connected together to form systems • To recognise the role of computer systems in our lives • To contribute to shared project online • To evaluate different ways of working together online • To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together	During this unit, learners will develop their knowledge and understanding of digital drawing. They will find out that vector images are made up of shapes. They will explore the ways in which images can be grouped and duplicated to support them in creating more complex pieces of work. *Children will be able:* • 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 an effect • To recognise that vector drawings consist of layers • To group objects to make them easier to work with • To evaluate my vector drawing	During this unit, learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. *Children will be able:* • 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	During this unit leaners looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. *Children will be able:* • 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	During this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program components. *Children will be able:* • 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 • 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	During this unit, pupils develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if… then… else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs using the Scratch programming environment. *Children will be able:* • 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 create a program that uses selection • To evaluation a program

The Crescent Primary School
Computing Skills Progression Grids

Year 6			
	Information Technology	**Computer Science**	**Digital Literacy**
Purpose	Using computers for functional purposes, e.g. collecting and presenting information, or using search technology.	Understanding how computers and networkswork and basic computer programming.	The safe and responsible use of technology,including recognising its advantages for collaboration or communication.
National Curriculum Aims	• *I can select, use and combine a variety of software (including internet services) on a range of digital devices todesign and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.* • *I can use search technologies effectively.*	• *I can design, write and debug programs that accomplish specific goals, including controlling orsimulating physical systems.* • *I can solve problems by decomposing them into smallerparts.* • *I can use sequence, selection and repetition inprograms.* • *I can work with variables and various forms of inputand output.* • *I can use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.* • *I understand computer networks including the internet.* • *I understand how the internet can provide multipleservices such as the world wide web.* • *I can appreciate how search results are selected andranked.*	• *I can use technology safely, respectfully and responsibly.* • *I can recognise acceptable and unacceptable behaviour.* • *I can identify a range of ways to report concerns aboutcontent and contact.* • *I can be discerning in evaluating digital content.* • *I understand the opportunities networks offer forcommunication and collaboration.*

The Crescent Primary School
Computing Skills Progression Grids

The Crescent Primary Computing Skills and Units					
Computing Systems and Networks – Communication	**Creating Media – 3D Modelling**	**Creating Media – Webpage creation**	**Data and Information – Spreadsheets**	**Programming A – Variables in games**	**Programming B – Sensing**
During this unit, learners will develop their knowledge and understanding of computing systems and online collaborative working. *Children will be able:* • To identify how to use a search engine • 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	During this unit, learners will develop their knowledge and understanding of using a computer to produce graphics. Learners will initially familiarise themselves with working in a 3D space, including combining 3D objects to make a house and examining the differences between working digitally with 2D and 3D graphics. *Children will be able:* • 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	During this unit, learners will develop their knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing. They will create a web page on a given topic. *Children will be able:* • To review an existingwebsite and consider itsstructure • To plan the features of aweb 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	During this unit, learners will develop their knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. *Children will be able:* • To identify questions which can be answered using data • To explain that objects can be described using data • To explain that formulas 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	During this unit leaners will explore the concept of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. *Children will be able:* • 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	This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers learners the opportunity to use all of these constructs in a different environment, while also utilising a physical device — the micro:bit. *Children will be able:* • 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 witha 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

The Crescent Primary School
Computing Skills Progression Grids

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