Greenside Primary School
Computing Progression Framework

Curriculum Intent

Community	Resilience	Creativity	Aspiration	Diversity

The computing curriculum at Greenside aims for children to develop:

- Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
- An understanding of the connected nature of devices.
- The ability to communicate ideas well by using applications and devices throughout the curriculum.
- The ability to collect, organise and manipulate data effectively.

Implementation

The Computing curriculum at Greenside Primary School has been carefully considered to ensure coverage of all the national curriculum objectives, whilst also focussing on providing a thorough education that will allow our pupils to use technology effectively, confidently, responsibly and safely. As a one and a half form entry school, we have carefully devised a 2-year cycle to ensure coverage of the key substantive knowledge, disciplinary skills and vocabulary, that they will need to flourish in world where technology will become a crucial part of their future life.

Computing at Greenside is taught through 4 key concepts: **Code**, **Connect**, **Communicate** and **Collect**. These key concepts steer our curriculum to give children a broad knowledge and understanding of a range of computer programs, devices and uses for technology. We understand the accessibility opportunities that technology can offer our pupils and through our curriculum, we aim for our pupils to become digitally literate in a variety of programs. For example, pupils learn to code on a variety of different programs (such as block coding on Scratch, Espresso or MakeCode, HMTL coding and Python coding) as well as programming on a range of different devices (such as BeeBots, iPads, Laptops and Micro: Bits). We hope that by the end of KS2, our pupils will be confident and competent to choose the best technology tool to present and share their learning.

Online Safety is taught every year across school from EYFS up to Year 6. In Key Stage 2, pupils follow the 'Be Internet Legends' scheme of work which provides a clear and progressive sequence of lessons that teaches pupils to be secure, kind, sharp, alert and brave when using devices and programs that are connected to the internet. Through our Online Safety units, which are further recapped and enhanced during learning on Safer Internet Day and Be Internet Legends Day, we aim for children to have a clear understanding about correct conduct online, what to do if they feel uncomfortable online and who to talk to. Online safety will be taught to ensure children are aware of the responsibility and consequences of their actions and decisions online.

The essential knowledge, highlighted in yellow, has been identified for each unit learning and forms the focus of teacher assessment.

The Computing Curriculum and Provision for Pupils with SEND

At Greenside Primary School, we believe all pupils should have the opportunity to learn to the best of their capabilities through a broad and balanced, inclusive curriculum. For our pupils with a Special Educational Need, we scaffold their learning to provide them with the strongest opportunities for success in our school. We believe firmly in the SEND Code of Practice's statement that 'every teacher is a teacher of SEN' and that our pupils with SEN should be provided with the same opportunities as their peers in our school. This means that, with their learning being personalised to meet their areas of need, they feel included in the classroom and make progress year on year. Reasonable adjustments are made in all lessons to enable this.

The Computing curriculum can be adapted to meet the needs of children with SEND in the following ways:

Universal Support across school for all subjects
Word Banks for pre-learning and to support during topics and themes
Cutting and Sticking Key Words on to work as prompts
Print out portions of work and learning objectives to minimise writing
Coloured Paper or recycled paper to minimise visual stress & background colours of the whiteboard is considered for pupils with dyslexia.
Breaking down lessons into short, manageable chunks - Printing work larger and in smaller chunks
Mixed ability groups – using peers as support and role models
Adult assistance nearby/ Using another student as a reader/support
Now/Next or Visual Timetables – class and individual/ My Turn/Your Turn
Knowledge map/Mind Maps
Talking postcards / talk to text / use of laptop to type rather than write
Cloze passages/activities to check learning
Draw answers or explanations / Actions – telling the story of a lesson
Fidget toys available/ Cushions for seats – wobble and wedge cushions - access to standing desks.
Pupils with hearing impairments/visual impairments are positioned close to the whiteboard to be able to access.
Word lists of key vocabulary for pre-learning and as prompts
A safe/quiet space in or Cloud Room
Keeping instructions short and one at a time

Universal Support specific to subject
Assistive technology, text to talk dictation
Physical activities, keyboard instruction mat
Different ways of recording work
Labelled resources to encourage independence
Demonstrate software in short, achievable steps for pupils who, for example, may have a poor concentration span or poor motor skills
Reduce the possibility of frustration at not being able to use programs to achieve an objective by having ‘how-to’ posters on the wall.
Data protection in place, e.g. concerning using pupils’ photographs on websites or other information about individual pupils’ identities. Pupils learn about ICT health and safety as part of the curriculum
Safety: - Regular checks on equipment, wiring and risk analysis. - Pupils do not queue by the printer. - Laptops or other mobile technologies can be easily transported on trolleys or other moveable storage furniture. - Password setting rules and internet safety policy in place. - Online safety: pupils understand the risks of displaying personal information on the internet.

When planning for Computing, class teachers should adapt their lessons where necessary using ideas taken from this list, however, it is important to remember this list is not exhaustive and other adaptations may be needed for children with specific needs.

We also have ‘Continuum of Provision Maps’ for each area of SEND need (e.g. Autism, Cognitive, SEMH, Visual impairment etc).

Breadth of Study

Core/Key Concepts	EYFS	KS1	KS2
Code: This concept involves developing an understanding of instructions, logic and sequences.	❖ Begin to show accuracy and care when drawing. *ELG Fine Motor Skills*	❖ 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.	❖ 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.
Connect: This concept involves developing an understanding of how to safely connect with others.	❖ Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. *ELG: Managing Self (PSED)* ❖ Explain the reasons for rules, know right from wrong and try to behave accordingly. *ELG: Managing Self (PSED)*	❖ 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. ❖ recognise common uses of information technology beyond school	❖ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. ❖ 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
Communicate: This concept involves using apps to communicate one's ideas.	❖ Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. *ELG: Creating with Materials (EA&D)* ❖ Demonstrate understanding of what has been read to them by retelling stories and narratives using their own words and recently introduced vocabulary; *ELG: Literacy Communication* ❖ Invent, adapt and recount narratives and stories with peers and their teacher; *ELG: Being Imaginative and Expressive*	❖ use technology purposefully to create, organise, store, manipulate and retrieve 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
Collect: This concept involves developing an understanding of databases and their uses.		❖ use technology purposefully to create, organise, store, manipulate and retrieve digital content	❖ use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Long Term Plans

<table>
<tr><th>EYFS</th><th></th><th colspan="2">KS1</th><th>LKS2</th><th>UKS2</th></tr>
<tr><td rowspan="12">Autumn Term:
Initial introduction to Internet Safety and introduction to using technology safely and rules of using school computing equipment.

Spring Term:
NCCE Unit Year 1 – Moving a Robot
(6 lessons over term)

Summer
Summer Storytelling through technology. Explore colour and design using painting program – Draw and Tell (iPad App). Allows children to draw and create film that they orate from their drawings.</td><td rowspan="6">Cycle A</td><td>Y1 Learn to Log in
NCCE Unit (Y1): Computing Systems & Networks – Technology Around Us.</td><td>Y2 Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td><td>Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td><td>Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td></tr>
<tr><td colspan="2">Online Safety
Year 1 Planning/Resources</td><td>Be Internet Legends
Be Internet Sharp & Be Internet Alert for 7-9</td><td>Be Internet Legends:
Be Internet Secure & Be Internet Kind for 9-11</td></tr>
<tr><td colspan="2">We are treasure hunters.
(Rising Stars Unit 1.1)
Programming Bee-Bots.</td><td>Espresso Coding
Block Coding - Level 3/4
➢ Y3 Sequence and Animation (4 lessons in 2)
➢ Y3 Conditional Events (5 lessons in 3)
➢ Y4 Introduction to Variables (6 lessons in 3)
➢ Y4 Repetition in Loops (4 lessons in 2)</td><td>Espresso Coding
Block Coding – Level 5/6
➢ Y5 Speed, direction Coordinates (6 lessons in 3)
➢ Y5 Randon numbers and simulations (5 lessons in 3)
➢ Y6 More Complex Variables (5 lessons in 3)
➢ Y6 Object Properties (5 lessons in 3)</td></tr>
<tr><td colspan="2">NCCE Unit (Y1): Creating Media – Digital Writing</td><td>NCCE Unit (Y3): Computer Systems & Networks – Connecting Computers</td><td>NCCE Unit (Y6): Computing Systems & Networks – Communication</td></tr>
<tr><td colspan="2">NCCE Unit (Y1): Creating Media – Digital Painting</td><td>NCCE Unit (Y3): Creating Media – Animation</td><td>NCCE Unit (Y5): Creating Media – Video Production</td></tr>
<tr><td colspan="2">Espresso Coding
Block Coding – Level 1/2
➢ Y1 On the Move (Under the Sea and Transport as you go)
➢ Y1 Simple Inputs (Burst the bubble, Magic Castle, Simple Inputs)
➢ Y2 Different sorts of Inputs (Red Riding Hood, Up in the air, Snow White)
➢ Y2 Buttons and Instructions (Fly a helicopter, Find my cat! Button and Instructions)
➢ Choose from outstanding lessons to fill in the term.</td><td>Espresso Coding
Python: Introduction to Python (7-8 lessons)</td><td>Espresso Coding
HTML: Introduction to HTML (7-8 lessons)</td></tr>
<tr><td rowspan="6">Cycle B</td><td>Y1 Learn to Log in
NCCE Unit (Y1): Computing Systems & Networks – Technology Around Us.</td><td>Y2 Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td><td>Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td><td>Use word to create other projects linked to topic or class country/identity.
Follow the Word progression of skills document.</td></tr>
<tr><td colspan="2">Online Safety
Year 2 Planning/Resources</td><td>Be Internet Legends
Be Internet Secure & Be Internet Kind for 7-9</td><td>Be Internet Legends:
Be Internet Sharp & Be Internet Alert for 9-11</td></tr>
<tr><td colspan="2">Scratch junior lessons.
(IPad)</td><td>Espresso Coding
Block Coding – Level 3/4
➢ Y3 Sequence and Animation (4 lessons in 2)
➢ Y3 Conditional Events (5 lessons in 3)
➢ Y4 Introduction to Variables (6 lessons in 3)
➢ Y4 Repetition in Loops (4 lessons in 2)</td><td>Espresso Coding
Block Coding – Level 5/6
➢ Y5 Speed, direction Coordinates (6 lessons in 3)
➢ Y5 Randon numbers and simulations (5 lessons in 3)
➢ Y6 More Complex Variables (5 lessons in 3)
➢ Y6 Object Properties (5 lessons in 3)</td></tr>
<tr><td colspan="2">NCCE Unit (Y2): Data and Information – Pictograms</td><td>NCCE Unit (Y4): Data and Information – Data Logging</td><td>NCCE Unit (Y5): Data and Information Flat-file Databases</td></tr>
<tr><td colspan="2">NCCE Unit (Y2): Creating Media – Digital Photography</td><td>NCCE Unit (Y3): Creating Media – Desktop Publishing</td><td>NCCE Unit (Y6): Creating Media – 3D Modelling</td></tr>
<tr><td colspan="2">Espresso Coding
Block Coding – Level 1/2
➢ Y1 On the Move (Under the Sea and Transport as you go)
➢ Y1 Simple Inputs (Burst the bubble, Magic Castle, Simple Inputs)
➢ Y2 Different sorts of Inputs (Red Riding Hood, Up in the air, Snow White)
➢ Y2 Buttons and Instructions (Fly a helicopter, Find my cat! Button and Instructions)
➢ Choose from outstanding lessons to fill in the term.</td><td>Coding
Micro-Bits: First lessons with MakeCode and the Micro: Bit
➢ L1 – Introduction to the Micro:bit
➢ L2 – Name badge and Beating Heart
➢ L3 – Emotion Badge
➢ L4 – Step Counter
➢ L5 – Nightlight
➢ L6 – Rock, Paper, Scissors</td><td>Coding
Micro: Bits: Micro: Bit Music</td></tr>
</table>

Progression of Computing Knowledge & Vocabulary

Key: Essential Knowledge identified for each unit of learning.

EYFS Knowledge and Vocab Summary			
	Internet Safety	**NCCE Unit Year 1 – Moving a Robot**	**Summer Storytelling**
ELG	❖ Explain the reasons for rules, know right from wrong and try to behave accordingly. *ELG: Managing Self (PSED)*	❖ Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. *ELG: Managing Self (PSED)* ❖ Explain the reasons for rules, know right from wrong and try to behave accordingly. *ELG: Managing Self (PSED)*	❖ Begin to show accuracy and care when drawing. *ELG Fine Motor Skills* ❖ Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. *ELG: Creating with Materials (EA&D)* ❖ Demonstrate understanding of what has been read to them by retelling stories and narratives using their own words and recently introduced vocabulary; *ELG: Literacy Communication* ❖ Invent, adapt, and recount narratives and stories with peers and their teacher; *ELG: Being Imaginative and Expressive*
Concept	Connect	Coding	Communicate
Assessment	Can you list different ways you can stay safe online? Who can help you stay safe online?	Can you program a robot to travel along a drawn path? Can you make your robot turn and change direction to follow a specified route?	Draw a picture using a tablet or a computer to go with a story you have shared.
Substantive Knowledge	• I can name at least 3 different electronic devices which I could use to go 'on-line'. • I know not to share personal information with people I do not know well. • I can give at least 3 examples of personal information. • I know to speak to a trusted adult if someone I don't know asks for personal information or if something upset me online.	• Know what a given command will do • Know how to combine forward and backward commands to make a sequence. • Create 4 direction commands to make a sequence • Create simple programs	• Know how to look after electronic devices • Know how to turn on a tablet • Know how to find a program on a tablet • When using a digital drawing program, be able to: - Change the colour - Make a mark - Explain what you have drawn - Erase a mistake using the undo button
Skills	• Independence • Responsibility • Digital Awareness	• Critical Thinking • Problem Solving • Persistence	• Persistence • Creativity
Vocabulary	Online, internet, safe, trusted adult, personal information.	Command, instruction, program, sequence, forward, backward, left, right,	Tablet, On, Off, Colour, Undo

KS1 Knowledge and Vocab Summary Cycle A

	Computing Systems and Networks – Technology Around Us (Year 1)	Word Processing Skills (Year 2)	Online Safety	We are Treasure Hunters (Programming Bee-bots)	Creating Media Digital Writing	Creating Media Digital Painting	Espresso Coding Level 1/2
NC	• Recognise common uses of information technology beyond school. • Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. • 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.	• 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.	• 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.	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. <u>Art NC:</u> • Use experiences and ideas as the inspiration for artwork. • Explore a variety of techniques. • Learn about the work of a range of artists, artisans and designers.	• 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.
Concepts	Connect	Communicate Collect	Connect	Coding	Communicate Collect	Communicate Collect	Coding
Assessment	Can you log-on to the computer independently? Can you open Microsoft Word, type your name and save the document?	Can you use Microsoft Word to produce a document which includes images that you have inserted?	Can you explain ways to stay safe when searching online? Can you explain email?	Can you successfully program the Bee-Bot to find the treasure?	Can you write a sentence on the computer? Can you change your text using the toolbar?	Can you create a picture of a sunflower using a computer?	Y1 - Can you write code with click and start events to create an animated scene? Y2 – Can you write code so that objects carry out different actions using different inputs?
Substantive Knowledge	• Know that technology is something that has been made with a specific purpose to help other people. • Know that the parts of a laptop are a screen, keyboard and mouse or touchpad. • Know that the cursor is moved by the mouse or trackpad and can be used in different ways. • Know that typing is the process of using a keyboard to write words, letters or numbers on a screen on a computer. • Know that you must save your work if you would like to access it or edit it in the future. • Know that the backspace, space and arrows on a keyboard can be used to edit text. • Know that it is important to follow rules to use a computer responsibly and safely.	• Know that the 'Shift' key is used to type capital letters. • Know that the 'Shift key is also used to access symbols at the top of some keys. • Know that the 'Shift' key must be held down whilst you press the corresponding key. • Know that the 'Space Bar' is used to add a space between words. • Know that you can continue typing when you reach the end of the line and you do not need to press 'Enter' to move on to the line below. • Know that the backspace, space and arrows on a keyboard can be used to edit text. • Know that text must be selected so that it can be formatted for size, style or colour. • Know that images can be inserted into Word documents by clicking 'Insert'>'Picture.	• Know that copyright is a type of ownership that stops others from copying your work or using it in a way you don't want to. • Know that searching on the internet is usually the quickest and easiest way to find an image. • Know that Search Engines are used to find information, images or videos online. • Know that Safe Search Filters are used to stay safe online. • Know that doing something 'Offline' is without using the internet. • Know that doing something 'Online' is using the internet. • Know that only adults should share personal information online. • Know that it is dangerous to share where we live or where we go to school. • Know that email is a letter sent through the internet. • Know that emails can take just seconds to be sent.	• Know that 'programming' is when you give a computer or device instructions to complete a task. • Know that the step-by-step instructions that we give for a computer or device to follow is known as an 'algorithm'. • Know that computers and programmable devices only understand specific and basic instructions. • Know that a bug is a mistake with the instructions/programming that means the device can't follow them. • Know that debugging is the correcting of a program to fix a mistake.	• Know that the keyboard is the part of the computer used to add, letters, numbers and symbols to a page. • Know that the buttons on a keyboard are called 'keys'. • Know that the 'Space Bar' key is used to add a space between words. • Know that the 'Enter' key is used to start writing on a new line. • Know that the 'Backspace' key is used to remove text from a page. • Know that the 'Caps Lock' key is used to type capital letters. • Know that the 'Toolbar' is used to change the way that text looks on a page (format). • Know that text must be selected so that it can be formatted for size, style or colour. • Know that the 'Undo' button will reverse what you have just done. • Know that the 'Redo' button will change something back if you have used the 'Undo' button.	• Know that different paint tools do different jobs. • Know that the 'Freehand' tools allow you draw allow us to draw by hand. • Know that Piet Mondrian was an artist who used shapes of different colours. • Know the 'Fill' tool will fill a shape with a selected colour. • Know that Henri Matisse created pictures using pieces of shapes. • Know that I can add different shapes of different sizes using the shape tool. • Know that the 'Undo' button will reverse what you have just done. • Know that Georges Seurat made paintings using dots of paint. • Know that colour and paint brush size can be changed using the toolbar.	<u>Year 1 (Level 1):</u> • Know that sequences of instructions are used to control computing technology. • Know that when a computer does something, it is following instructions called 'code'. • Know that 'code' can make more than one thing happen at once. • Know that a character is an object and code can be written to make it move around the screen. • Know that 'code' can be written to make an object carry out an action if clicked on. • Know that 'programming' is when you give a computer or device instructions to complete a task. • Know that code is used to create a game or animation. <u>Year 2 (Level 2):</u> • Know that 'code' can be written to make an object carry out an action if clicked on. • Know that an object can be coded to move in different directions or complete different actions when different keys are pressed ('key press event'). • Know that an object can be coded to follow a mouse pointer. • Know that 'debugging' means to fix problems with the code.

Disciplinary Knowledge	• I can name the main parts of a computer. • I can switch on and log into a laptop. • I can use a mouse to click and drag. • I can use a mouse to open a program. • I can click and drag to make objects on a screen. • I can use a mouse to create a picture. • I can say what a keyboard is used for. • I can type my name on a computer. • I can save my work to a file I can open my work from a file. • I can use the arrow keys to move the cursor. • I can delete letters. • I can identify rules to keep us safe and healthy when we are using technology in and beyond the home. • I can give examples of some of these rules and discuss how we benefit from these rules	• I can use a keyboard to type on a computer. • I can type upper and lowercase symbols by using the Caps Lock and Shift keys. • I can use one space between words that I type. • I can Save a file. • To use a mouse or trackpad in different ways. • To use a keyboard to edit text, including using the arrow keys to move the cursor. • I can use the 'Undo' and 'Redo' when I make a mistake. • I can select and a group of words using the mouse. • I can select and a group of words using the keyboard. • I can change the size, colour and font of text. • I can format text using bold, italics and underline. • I can add images to a Word document.	• I can type their name and date on a piece of work they have created. • I can open a web browser. • I can make links between the online and offline world. • I can choose the correct Safe Search filter when using a search engine. • I can recall the SMART rules for Internet safety. • I know who to tell if someone online asks for personal information and recognise which personal information I should keep safe from strangers. • I can understand why email is a good way to communicate. • I can help construct an email using a computer or digital device.	• I can give and follow instructions to move around space. • I can develop and record a sequence of instructions as an algorithm. • I can program a device (Bee-Bot) to follow an algorithm. • I can program a device (Bee-Bot) to follow an algorithm to achieve a particular goal. • I can debug a simple program for a device (Bee-Bot). • I can predict how my programs will make the device (Bee-Bot) move.	• I can identify and find keys on a keyboard. • I can open a word processor. • I can recognise keys on a keyboard. • I can use backspace to remove text. • I can use letter, number, and space keys. • I can explain what the keys that I have learnt about already do. • I can identify the toolbar and use bold, italic, and underline. • I can type capital letters. • I can change the font. • I can select all of the text by clicking and dragging. • I can select a word by double-clicking. • I can decide if my changes have improved my writing. • I can say what tool I used to change the text. • I can use 'undo' to remove changes. • I can explain the differences between typing and writing. • I can make changes to text on a computer. • I can say why I prefer typing or writing.	• I can make marks on a screen and explain which tools I used. • I can use the paint tools to draw a picture. • I can use the shape and line tools effectively. • I can use the shape and line tools to recreate the work of an artist. • I can choose appropriate shapes. • I can create a picture in the style of an artist. • I can choose appropriate paint tools and colours to recreate the work of an artist. • I can say which tools were helpful and why. • I can change the colour and brush sizes. • I can make dots of colour on the page. • I can use dots of colour to create a picture in the style of an artist on my own. • I can explain that pictures can be made in lots of different ways. • I can say whether I prefer painting using a computer or using paper. • I can spot the differences between painting on a computer and on paper.	<u>Year 1 (Level1):</u> • I can write code to make a character or characters (objects) move across the screen in different directions. • I can explain how I have used code to make objects move in the directions I have chosen. • I can write code to make different objects move in different directions when they are clicked on. • I can write and combine code to make an object disappear when it is clicked on, or to make it move when my program starts. • I can combine start events and click events to create an animated scene and explain how my code works. • I can write code in which the same object responds to both click events and start events. • I can plan and design my own animation and explain how I used start and click events. <u>Year 2 (Level2):</u> • I can write code to make an object move in different directions and stop when different keys are pressed. • I can write code to make several planes move, change directions and disappear when different keys are pressed. • I can write code so that different buttons can be used to make different objects complete different actions.
Vocabulary	technology, typing, mouse, keyboard, cursor, switch-on, power button, touch pad, laptop, desktop, login, spacebar, website/web browser, click, drag.	uppercase, lowercase, shift, caps lock, symbol, images, insert, save, undo, redo, select, format, bold, italics, underline, font	online, offline, ownership, copyright, search, web browser, search engine, filter, personal information	program, programming, algorithm, bug, de-bugging, input, output	keyboard, keys, word processor, cursor, enter, spacebar, backspace, caps lock, toolbar, format, bold, italics, underline, font, undo, redo	paint program, freehand, paintbrush, erase, fill, undo, primary colours, tools, brush style,	code, instructions, run, up, down, left, right, direction, object, action, click, click event, program, programming, decompose, start event, start, algorithm key press event, object, action, input, key, run, execute, direction, code, key press, clockwise, anti-clockwise, mouse, pointer, device, debug

KS1 Knowledge and Vocab Summary Cycle B

	Computing Systems and Networks – Technology Around Us (Year 1)	Word Processing Skills (Year 2)	Online Safety	Scratch Junior	Data and Information Pictograms	Creating Media Digital Photography	Espresso Coding Level 1/2
NC	• Recognise common uses of information technology beyond school. • Use technology purposefully to create, organise, store, manipulate, and retrieve digital content. • 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.	• 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.	• 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.	<u>Computing NC:</u> • use technology purposefully to create, organise, store, manipulate and retrieve digital content. • 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. <u>Maths NC:</u> Year 1: • Identify and represent numbers using objects and pictorial representations. Year 2: • interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	• Use technology purposefully to create, organise, store, manipulate, and retrieve digital content.	• 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.
Concepts	Connect	Communicate Collect	Connect	Coding	Collect	Communicate	Coding
Assessment	Can you log-on to the computer independently? Can you open Microsoft Word, type your name and save the document?	Can you use Microsoft Word to produce a document which includes images that you have inserted?	Can you explain ways to stay safe when searching online? Can you explain what cyber-bullying means and what to do if it happens to you?	Pupils complete different challenges using scratch through coding.	Can you create a tally chart and a pictogram on your device to represent data that you have collected?	Can you apply a range of photography skills to take a photograph?	Y1 - Can you write code with click and start events to create an animated scene? Y2 – Can you write code so that objects carry out different actions using different inputs?
Substantive Knowledge	• Know that technology is something that has been made with a specific purpose to help other people. • Know that the parts of a laptop are a screen, keyboard and mouse or touchpad. • Know that the parts of a desktop computer are a screen, keyboard, mouse and base unit. • Know that the cursor is moved by the mouse or trackpad and can be used in different ways. • Know that typing is the process of using a keyboard to write words, letters or numbers on a screen on a computer. • Know that you must save your work if you would like to access it or edit it in the future. • Know that the backspace, space and arrows on a keyboard can be used to edit text. • Know that it is important to follow rules to use a computer responsibly and safely.	• Know that the 'Shift' key is used to type capital letters. • Know that the 'Shift key is also used to access symbols at the top of some keys. • Know that the 'Shift' key must be held down whilst you press the corresponding key. • Know that the 'Space Bar' is used to add a space between words. • Know that you can continue typing when you reach the end of the line and you do not need to press 'Enter' to move on to the line below. • Know that the backspace, space and arrows on a keyboard can be used to edit text. • Know that text must be selected so that it can be formatted for size, style or colour. • Know that images can be inserted into Word documents by clicking 'Insert'>'Picture.	• Know that a digital footprint contains information about a person. • Know that other people can use the information that we put online. • Know that using keywords will give good results when using an online search to find out about a topic. • Know that there are dangers to using the internet. • Know what to do if a website makes me feel uncomfortable. • Know that cyberbullying is when someone is purposefully mean to someone else online.	• Know that a character is an object and code can be written to make it move around the screen. • Know that Scratch Junior is an app used to make a story, animation or game. • Know that start block is needed to begin a sequence of code. • Know that an end block is needed to end a sequence of code. • Know that a blue motion block is used to make a character move across the screen. • Know that the distance a character moves can be adjusted by changing the number field within the blue motion block. • Know that the speed a character move can be adjusted by using a 'Set Speed' control block. • Know that a character can be made to disappear using the 'Hide' looks block.	• Know that a tally chart is a table used for counting and comparing amounts using marks called tallys. • Know that Pictograms are charts which use pictures to represent data. • Know that a common attribute is way to describe an object that is shared by multiple objects. • Know that we can group objects using attributes. • Know that it isn't always safe to share data.	• Know that that many different devices can be used to take photographs and that some of those devices just do one thing and that others have others roles too. • Know that before taking anyone's photo, you should ask them if it's OK. • Know that a portrait photo is taken with the camera held upright. • Know that a landscape photo is taken with the camera held sideways. • Know that the positioning, framing and detail of the subject are important to take a good photograph. • Know that more light can be added when taking a photo through choosing locations with more daylight, using the camera flash or by using another light source. • Know that the 'Adjust' tool on the editing software can be used to change the colour effect of an image.	<u>Year 1 (Level 1):</u> • Know that sequences of instructions are used to control computing technology. • Know that when a computer does something, it is following instructions called 'code'. • Know that 'code' can make more than one thing happen at once. • Know that a character is an object and code can be written to make it move around the screen. • Know that 'code' can be written to make an object carry out an action if clicked on. • Know that 'programming' is when you give a computer or device instructions to complete a task. • Know that code is used to create a game or animation. <u>Year 2 (Level 2):</u> • Know that 'code' can be written to make an object carry out an action if clicked on. • Know that an object can be coded to move in different directions or complete different actions when different keys are pressed ('key press event'). • Know that an object can be coded to follow a mouse pointer. • Know that 'debugging' means to fix problems with the code.

Disciplinary Knowledge	• I can name the main parts of a computer. • I can switch on and log into a computer. • I can use a mouse to click and drag. • I can use a mouse to open a program. • I can click and drag to make objects on a screen. • I can use a mouse to create a picture. • I can say what a keyboard is used for. • I can type my name on a computer. • I can save my work to a file I can open my work from a file. • I can use the arrow keys to move the cursor. • I can delete letters. • I can identify rules to keep us safe and healthy when we are using technology in and beyond the home. I can give examples of some of these rules and discuss how we benefit from these rules	• I can use a keyboard to type on a computer. • I can type upper and lowercase symbols by using the Caps Lock and Shift keys. • I can use one space between words that I type. • I can Save a file. • To use a mouse or trackpad in different ways. • To use a keyboard to edit text, including using the arrow keys to move the cursor. • I can use the 'Undo' and 'Redo' when I make a mistake. • I can select and a group of words using the mouse. • I can select and a group of words using the keyboard. • I can change the size, colour and font of text. • I can format text using bold, italics and underline. • I can add images to a Word document.	• I can explain what a digital footprint is. • I can begin to identify possible dangers online. • I can identify websites suitable for my age. • I know when to ask an adult for advice about accessing a website. • I can select good key words to give useful search results. • I can use a website to search for information safely on the internet. • I can respond in a suitable manner if online content makes them feel uncomfortable. • I can express opinions about a website. • I can recognise unacceptable online behaviours. • I can identify unkind online behaviour. • I know what to do if I think someone is being unkind online.	• I can select a background and character. • I can resize objects within the 'stage'. • I can use a directional movement key to move an object. • I can alter the speed of movement of a character. • I can program a sequence of events. • I can edit a background. • I can make a character appear or disappear. • I can make a character move in different directions.	• I can compare totals in a tally chart. • I can record data in a tally chart. • I can represent a tally count as a total. • I can enter data onto a computer. • I can use a computer to view data in a different format. • I can use pictograms to answer simple questions about objects. • I can explain what the pictogram shows. • I can organise data in a tally chart. • I can use a tally chart to create a pictogram. • I can answer 'more than'/'less than' and 'most/least' questions about an attribute. • I can create a pictogram to arrange objects by an attribute. • I can tally objects using a common attribute. • I can choose a suitable attribute to compare people. • I can collect the data I need. • I can create a pictogram and draw conclusions from it. • I can give simple examples of why information should not be shared. • I can share what I have found out using a computer. • I can use a computer program to present information in different ways.	• I can recognise what devices can be used to take photographs. • I can talk about how to take a photograph. • I can explain what I did to capture a digital photo. • I can take photos in both landscape and portrait format. • I can explain why a photo looks better in portrait or landscape format. • I can identify what is wrong with a photograph. • I can explore the effect that light has on a photo. • I can experiment with different light sources. • I can recognise that images can be changed. • I can use a tool to achieve a desired effect. • I can recognise which photos have been changed.	<u>Year 1 (Level1):</u> • I can write code to make a character or characters (objects) move across the screen in different directions. • I can explain how I have used code to make objects move in the directions I have chosen. • I can write code to make different objects move in different directions when they are clicked on. • I can write and combine code to make an object disappear when it is clicked on, or to make it move when my program starts. • I can combine start events and click events to create an animated scene and explain how my code works. • I can write code in which the same object responds to both click events and start events. • I can plan and design my own animation and explain how I used start and click events. <u>Year 2 (Level2):</u> • I can write code to make an object move in different directions and stop when different keys are pressed. • I can write code to make several planes move, change directions and disappear when different keys are pressed. • I can write code so that different buttons can be used to make different objects complete different actions.
Vocabulary	technology, typing, mouse, keyboard, cursor, switch-on, power button, touch pad, laptop, desktop, login, spacebar, website/web browser, click, drag.	uppercase, lowercase, shift, caps lock, symbol, images, insert, save, undo, redo, select, format, bold, italics, underline, font	digital, digital footprint, trail, e-safety, online, website, advert, content, social media, post, public, keyword, search engine, internet, cyberbullying, chat, messenger	algorithm, coding, background, character, program, motion block, start block, end block,	more than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, count, attribute, group, block diagram	device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter	code, instructions, run, up, down, left, right, direction, object, action, click, click event, program, programming, decompose, start event, start, key press event, object, action, input, key, run, execute, direction, code, key press, clockwise, anti-clockwise, mouse, pointer, device, debug

LKS2 Knowledge and Vocab Summary Cycle A

	Be Internet Legends - Be Internet Sharp, Alert & Brave for 7-9 (Internet Legends Planning 7-9: L1, L3, L5)	**Word Processing**	**Espresso Coding** **Block Coding - Level 3/4**	**Computer Systems & Networks – Connecting Computers**	**Creating Media – Animation**	**Espresso Coding** **Python: Introduction to Python**
NC	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • 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.	• 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	• 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.	• 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	• 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.
Concept	Connect	Communicate Collect	Coding	Connect	Communicate	Coding
Assessment	Can pupils demonstrate their understanding of how to stay safe online by completing the relevant 'Interland' activities?	Can you use Microsoft Word to produce an information sheet about Wooly Mammoths using keyboard shortcuts and text boxes?	Y3 - Can you use code make things happen in a sequence and use 'if statements' depending on what happens to other objects? Y4 – Can you create simple games which use a score variable and use loops to create an animated hot air balloon show?	Can you explain how a computer network works?	Can you create a stop-frame animation with characters and a background that has a smooth motion?	Can you use your knowledge to debug the Python coding and complete the skills test?
Substantive Knowledge	• Know that someone's online reputation is anything that appears about them on the internet. • Know that ways to protect your online reputation include not posting embarrassing photos or videos online, not writing unkind or hurtful comments and posts online, being kind to others and checking privacy settings to make sure people can't see all your personal information. • Know that 'Being Internet Sharp' means knowing what kind of information to put online to protect your online reputation. • Know that 'Being Internet Alert' is being able to work out whether things we see online are true. • Know that online content can be interpreted in different ways through the eyes of different people. • Know that it's hard to fully understand the meaning behind online content. • Know that everything online comes from a range of sources and how to choose the best source of information online. • Know that sources have strengths and weaknesses and that the very best answers often come from asking many sources and comparing their answers. • Know that online usage has a range of potential highs and lows. • Know that I should talk to trusted adults if I see something upsetting content online. • Know it's OK to feel scared or sad when you see something upsetting on (or off) a screen.	• Know the importance of the words we choose to search with on a search engine. By including 'for kids' will help ensure our search is safe. • Know that keyboard shortcuts are quicker than using a mouse. • Know that 'Ctrl' + 's' is a shortcut to save our work. • Know that 'Ctrl' + 'b' is a shortcut to make text bold. • Know that 'Ctrl' + 'i' is a shortcut to make text italic. • Know that 'Ctrl' + 'u' is a shortcut to underline text. • Know that 'Ctrl' + 'z' is a shortcut to undo. • Know that 'Ctrl' + 'c' is a shortcut to copy. • Know that a text box or shape can inserted on a document under the 'Insert' tab on the tool bar. • Know that size of margins and the orientation of the page can be changes under the 'Layout' tab on the toolbar.	Year 3 (Level 3): • Know that code must be made in a particular order so that objects can form actions in a sequence. • Know that a timer can also be used to control the sequence in which a section of code is executed. • Know that objects can be programmed to react if certain conditions are met. • Know that a 'hit event' is when an object collides with a particular background colour. • Know that code can include conditional hit events to program the direction an object moves, stop an object to make it disappear. Year 4 (Level 4): • Know that a variable can be used in code to count events and keep track of a score. • Know that the value of a variable can be programmed to change as a result of a specific input or event. • Know that the value of a variable can be programmed to change by positive or negative amounts as a result of a specific input or event. • Know that a 'repeat' command can be used as more efficient way of building code. • Know that a 'loop' can be used to do something repeatedly in a program. • Know that a 'nested loop' is a loop within a loop. • Know that 'always', 'every __ seconds' and 'if statement' blocks can be used to create more complex code.	• Know that digital devices must have an input, a process and an output. • Know that digital devices accept inputs such as pressing a button on a keyboard/ phone/ camera/mouse which tells it what to do. • Know that following an input, the digital device completes a process as instructed. • Know that digital devices produce an output (such as letters appearing, a photograph being shown or opening a program) following an input and a process. • Know that a mouse, computer, webcam, microphone, games controller, touch screen and pedestrian crossing button are examples of input devices. • Know that a laptop, games console, tablet and pedestrian crossing unit are examples of digital devices that process. • Know that printers, screens, speakers & traffic lights are examples of output devices. • Know that many inputs to one device to one output' connections are also possible. • Know that digital devices are connected to other devices, e.g. computers through wires, tablets through WiFi, and smartphones through mobile phone networks. • Know that the benefit of connecting digital devices is that it allows information to be shared between users and systems. • Know that a computer network connects two or more computers and communication devices so we can share data, files, or apps. • Know that a network switch allows multiple devices on a network to be connected. • Know that a 'server' is a computer that manages the network and stores files. • Know that a 'wireless access point (WAP)' is a device, connected to a wired network, that sends and receives wireless signals for/from devices with WiFi connectivity.	• Know that an animation is where a number of pictures are drawn or taken of an object or picture, and the pictures are shown quickly, which makes it look like the object or picture is moving. • Know that key techniques - such keeping the iPad still, moving characters gradually, checking the picture before taking the photo and taking care not to move the background - are important to create a smooth animation. • Know that onion skinning in animation is an editing technique used to see several frames of an animation at the same time. This means the animator can tell whether the lines of each frame are correctly lined up to create an animation with smooth motion.	• Know that programmers often work collaboratively to minimise mistakes in the code, which could create bugs: one person focuses on the coding, whilst the other keeps an eye on the objectives. • Know that the 'Print' function consists of the word print followed by a set of brackets. • Know that when using the 'Print' function you must add the text inside the brackets to tell the computer what to display or print, on the screen. • Know that the symbol to show multiplication is *. • Know that the symbol to show and division is /. • Know that Python will read numbers and work them out like a calculator when there are no speech marks. • Know that when speech marks are included Python reads the number like text. Computer programmers call this a string. • Know that an 'if' command is a way of coding selection. • Know that a Variable is an object used to store a simple piece of information, such as a score or the time taken.

Disciplinary Knowledge	• I can identify what personal information is safe to share online. • I can identify the consequences of sharing personal information online. • I can identify the best privacy solution to protect my digital footprint. • I can identify whether information online is true and reliable. • I can use motive and expertise as clues to decide which information sources are credible. • I can identify situations of harassment or bullying online.I can evaluate what it means to be a bystander or helper. I can identify specific ways to respond to bullying when you see it. I can identify how to behave if you experience harassment.	• I can use the rows on a keyboard to type letters. • I can type capital letters. • I can type a range of punctuation such as commas, apostrophes, slashes and full stops. • I can use a website to search for information safely on the internet. • I can use the keyboard shortcut to save my work. • I can use keyboard short cuts to change the appearance of text (bold, italic and underline). • I can add a page border to my document. • I can copy and paste an image that I have found on the internet using the Snipping Tool. • I can edit the size of an image on a document using the height and width tabs. • I can change the text wrapping of an image to allow me to reposition it. • I can crop an image.	<u>Year 3 (Level 3):</u> • I can plan and write sequences of instructions to create a program involving multiple objects. • I can describe the order in which different parts of my code will execute and explain how this helped me create my program. • I can use several timer events to sequence different parts of my code and use this to solve a problem. • I can explain a timer event has helped me to control the sequence in which parts of my code are executed. • I can use more than one condition hit event in my code. • I can explain how to use conditional hit events to make objects stop and disappear. • I can use a 'hit event' to make an object follow a route with several changes of direction. • I can use several conditional 'hit events' to make different things happen on the screen. <u>Year 4 (Level 4):</u> • I can program a variable to increase in value by different amounts when an object is clicked and explain how it can be used to keep track of a score. • I can program a time limit. • I can include a variable that increases by different amounts, depending on which condition is met. • I can explain how my code works and identify the variables and conditional events I have used. • I can write code where the value of a variable changes by positive and negative amounts when different conditions are met. • I can write code with several variables including a reset to zero. • I can choose when to use repetition in my code to make my code more efficient and say why it is useful. • I can write code that includes more complex repetition such as a nested loop. • I can use 'always', 'every __ seconds' and 'if statement' blocks to create an animation.	• I can explain that digital devices accept inputs. • I can explain that digital devices produce outputs. • I can follow a process. • I can classify input and output devices. • I can describe a simple process. • I can design a digital device. • I can explain how I use digital devices for different activities. • I can recognise similarities between using digital devices and non-digital tools. • I can suggest differences between using digital devices and non-digital tools. • I can discuss why we need a network switch. • I can explain how messages are passed through multiple connections. • I can recognise different connections. • I can demonstrate how information can be passed between devices. • I can explain the role of a switch, server, and wireless access point in a network. • I can recognise that a computer network is made up of a number of devices. • I can identify how devices in a network are connected together. • I can identify networked devices around me. • I can identify the benefits of computer networks.	• I can create an effective flip book—style animation. • I can draw a sequence of pictures. • I can explain how an animation/flip book works. • I can create an effective stop-frame animation. • I can explain why little changes are needed for each frame. • I can predict what an animation will look like. • I can break down a story into settings, characters and events. • I can create a storyboard. • I can describe an animation that is achievable on screen. • I can evaluate the quality of my animation. • I can review a sequence of frames to check my work. • I can use onion skinning to help me make small changes between frames. • I can evaluate another learner's animation. • I can explain ways to make my animation better. • I can improve my animation based on feedback. • I can add other media to my animation. • I can evaluate my final film. • I can explain why I added other media to my animation.	• I can author a simple program that outputs information. • I can input key information accurately. • I can understand the importance of the order of code. • I can use Python to make simple calculations. • I can recognise symbols for multiplication (*) and division (/). • I can run the input command to prompt an answer from the user • I can recognise a variable within the code. • I can use variables to display the answer from the input command. • I can demonstrate and explain the 'if' command. • I can use variables to perform calculations. • I can modify the name of a variable and understand its effect. • I can work with multiple variables to perform more complex calculations.
Vocabulary	online reputation, digital footprint, privacy, reliable, real, fake, motive, expertise, credible, source, content, trusted adult, harassment, bullying.	shortcut, control, margins, orientation, portrait, landscape, page border, copy, paste, crop, text wrapping, format, insert, text box	Sequence, run, before, after, execute, algorithm, order, action, timer, event, debug, hit event, conditional statement. Variable, conditional event, condition, repetition, loop, efficient, nested loop, always, if statement	digital device, input, output, process, program, connection, wired connection, wireless connection, network, network switch, server, wireless access point (WAP), network socket	animation, flipbook, stop-frame animation, frame, sequence, image, photograph, setting, character, events, onion skinning	programmer, collaboratively, print, command, string, input, variable, 'if' command

LKS2 Knowledge and Vocab Summary Cycle B						
	Word Processing	**Be Internet Legends - Be Internet Secure, Kind & Brave for 7-9** (Internet Legends Planning 7-9: L2, L4, L6)	**Espresso Coding** **Block Coding - Level 3/4**	**Data and Information – Data Logging**	**Creating Media – Desktop Publishing**	**Coding – Micro Bits**
NC	• 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • 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.	• 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.	• 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.	• 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	• 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.
Concepts	Communicate Collect	Connect	Coding	Collect Communicate	Communicate	Coding
Assessment	Can you use Microsoft Word to produce an information sheet about the Romans which includes facts that you have researched and typed out, images that you have copied and edited, and a page border?	Can pupils demonstrate their understanding of how to stay safe online by completing the relevant 'Interland' activities?	Y3 - Can you use code make things happen in a sequence and use 'if statements' depending on what happens to other objects? Y4 – Can you create simple games which use a score variable and use loops to create an animated hot air balloon show?	Can you collect data using a data logger and analyse the data to form a conclusion?	Can pupils explain the advantages of Desktop Publishing?	Can you program the Micro: Bit into an electronic simulation of the 'Rock, Paper, Scissors' game?
Substantive Knowledge	• Know that touch typing is to learn to type letter without looking at the keys. • Know that touch typing is the fastest way to write. • Know that the middle row of letters on a keyboard, which begins a,s,d,f… is known as the home row. • Know that when beginning to touch type, fingers should rest on the keys along the home row. • Know that it is important not to look at your hands when learning to touch type. • Know that you can either use the 'Shift' key or 'Caps Lock' keys to type capital letters. • Know the importance of the words we choose to search with on a search engine. By including 'for kids' will help ensure our search is safe. • Know that keyboard shortcuts are quicker than using a mouse. • Know that 'Ctrl' + 's' is a shortcut to save our work. • Know that 'Ctrl' + 'b' is a shortcut to make text bold. • Know that 'Ctrl' + 'i' is a shortcut to make text italic. • Know that 'Ctrl' + 'u' is a shortcut to underline text. • Know that size of margins and the orientation of the page can be changes under the 'Layout' tab on the toolbar. • Know that size, position and style of an image can be changed using the picture tools 'format' tab.	• Know that strong passwords are important to protect my personal information. • Know that a strong password has a mix of upper and lowercase letters, symbols and numbers. • Know that examples of weak password include 'password', 'school', 'their name' etc. • Know that a two-step verification process makes extra secure and could involve entering a password and another piece of memorable data about you, or the use of two separate devices. • I know that when using an app or website to look for an option like 'My Account' or 'Settings'. This is where I will find the privacy and security settings that let me decide what information is visible on my page or profile and who can view your posts, photos, videos or other content that I share. • I know that the safest choice with online profiles is to have only your offline friends and family following you or on your friends list. • Know that not to share passwords with friends.	<u>Year 3 (Level 3):</u> • Know that code must be made in a particular order so that objects can form actions in a sequence. • Know that a timer can also be used to control the sequence in which a section of code is executed. • Know that objects can be programmed to react if certain conditions are met. • Know that a 'hit event' is when an object collides with a particular background colour. • Know that code can include conditional hit events to program the direction an object moves, stop an object to make it disappear. <u>Year 4 (Level 4):</u> • Know that a variable can be used in code to count events and keep track of a score. • Know that the value of a variable can be programmed to change as a result of a specific input or event. • Know that the value of a variable can be programmed to change by positive or negative amounts as a result of a specific input or event. • Know that a 'repeat' command can be used as more efficient way of building code. • Know that a 'loop' can be used to do something repeatedly in a program. • Know that a 'nested loop' is a loop within a loop. • Know that 'always', 'every __ seconds' and 'if statement' blocks can be used to create more complex code.	• Know that Data' is information, usually numerical, that is collected and stored in a form suitable for processing. • Know that data is collected by scientists, governments, businesses, schools, and many other organisations. • Know that a 'data set' is a collection of related information, usually linked to one subject or time frame. • Know that a data logger is a digital device that can collect data over time and store it. • Know that input devices allow data to be entered into a computer. • Know that a sensor is a type of input designed to allow computers to capture data from the physical environment e.g. temperature, light, sound etc. • Know that data loggers capture data at given time intervals. The interval is a regular time period between each data capture, and can vary according to the experiment. • Know that each capture of data is known as a 'data point'.	• Know that text and images need to be used carefully if they are to communicate messages clearly. • Know that desktop publishing is a way of creating documents that include both text and images, such as invitations, magazines, or newsletters using page layout software. • Know that changing the font size, colour and style are important ways to highlight the most important information. • Know that a template is a document that has already been laid out in a certain way and can be helpful because they give you different page layouts to choose from. • Know that placeholders are the boxes that hold the place of the text or images that you are going to add to your document and are helpful because you can design your page layout before having to think about the content you are going to add. • Know that the way the text is arranged or laid out on the page is very important and is arranged in different ways depending on the purpose of the document.	• Know that the micro: bit is a tiny computer which needs instructions in code to make it work. • Know that sets of instructions for computers in a sequence are also called algorithms or programs. • Know the micro: bit has an LED display output which it can use code to show words (as well as numbers and pictures). • Know that sequence and timing is important when making an animation. • Know that animations create an illusion of movement by showing a sequence of still images. • Know that loops make animations run longer use fewer instructions. • Know that inputs and outputs involve the flow of data in and out of computers. • I know how to use the micro:bit's button inputs and display output. • Know how sensor inputs from accelerometer can be used to detect movement. • Know that variables are containers for storing data which can be accessed and updated. • Know that the order of instructions is important. • Know that 'logic' (conditional 'if…then…else' instructions) is used to make different outputs happen depending on changes in data.

Disciplinary Knowledge	• I can use the rows on a keyboard to type letters. • I can type capital letters. • I can type a range of punctuation such as commas, apostrophes, slashes and full stops. • I can use a website to search for information safely on the internet. • I can use the keyboard shortcut to save my work. • I can use keyboard short cuts to change the appearance of text (bold, italic and underline). • I can add a page border to my document. • I can copy and paste an image that I have found on the internet using the Snipping Tool. • I can edit the size of an image on a document using the height and width tabs. • I can change the text wrapping of an image to allow me to reposition it. • I can crop an image.	• I can make strong passwords to secure my information online. • I can identify ways to be kind to others online. • I can identify the location of privacy settings on a device. • I can identify situations when it's better to wait to communicate face-to-face with a peer than to text them right away.	<u>Year 3 (Level 3):</u> • I can plan and write sequences of instructions to create a program involving multiple objects. • I can describe the order in which different parts of my code will execute and explain how this helped me create my program. • I can use several timer events to sequence different parts of my code and use this to solve a problem. • I can explain a timer event has helped me to control the sequence in which parts of my code are executed. • I can use more than one condition hit event in my code. • I can explain how to use conditional hit events to make objects stop and disappear. • I can use a 'hit event' to make an object follow a route with several changes of direction. • I can use several conditional 'hit events' to make different things happen on the screen. <u>Year 4 (Level 4):</u> • I can program a variable to increase in value by different amounts when an object is clicked and explain how it can be used to keep track of a score. • I can program a time limit. • I can include a variable that increases by different amounts, depending on which condition is met. • I can explain how my code works and identify the variables and conditional events I have used. • I can write code where the value of a variable changes by positive and negative amounts when different conditions are met. • I can write code with several variables including a reset to zero. • I can choose when to use repetition in my code to make my code more efficient and say why it is useful. • I can write code that includes more complex repetition such as a nested loop. I can use 'always', 'every __ seconds' and 'if statement' blocks to create an animation.	• I can choose a data set to answer a given question. • I can identify data that can be gathered over time. • I can suggest questions that can be answered using a given data set. • I can explain what data can be collected using sensors. • I can identify that data from sensors can be recorded. • I can use data from a sensor to answer a given question. • I can identify the intervals used to collect data. • I can recognise that a data logger collects data at given points. • I can talk about the data that I have captured. • I can explain that there are different ways to view data. • I can sort data to find information. • I can view data at different levels of detail. • I can plan how to collect data using a data logger. • I can propose a question that can be answered using logged data. • I can use a data logger to collect data. • I can draw conclusions from the data that I have collected. • I can explain the benefits of using a data logger. • I can interpret data that has been collected using a data logger.	• I can explain the difference between text and images. • I can identify the advantages and disadvantages of using text and images. • I can recognise that text and images can communicate messages clearly. • I can change font style, size, and colours for a given purpose. • I can edit text. • I can explain that text can be changed to communicate more clearly. • I can create a template for a particular purpose. • I can define the term 'page orientation'. • I can recognise placeholders and say why they are important. • I can choose the best locations for my content. • I can make changes to content after I've added it. • I can paste text and images to create a magazine cover. • I can choose a suitable layout for a given purpose. • I can identify different layouts. • I can match a layout to a purpose. • I can compare work made on desktop publishing to work created by hand. • I can identify the uses of desktop publishing in the real world. • I can say why desktop publishing might be helpful.	• I can use the Make Code editor to create instructions in code that the micro: bit can understand and then transfer them to the micro: bit. • I can explain that the micro: bit is a tiny computer. • I can explain that computers need to be given set of instructions (an algorithm) in code. • I can give the micro: bit instructions in code to make a name badge using the LED display output. • I can create a micro: bit animation using a sequence of images in a loop. • I can explain that loops can make code more compact and easier to read. • I can explain that inputs are data sent to a computer. • I can explain that outputs are data sent from a computer. • I can turn my micro: bit into step counter using the accelerometer and variables. • I can explain that an accelerometer is a sensor that sense movement. • I can use 'forever' infinite loops to control systems responding to changes in the environment. • I can code a micro: bit to make a light switch on when it gets dark using sensors and logic. • I can explain that logic how computers make decisions in code based on whether things are true or false. • I can use the accelerometer via the 'on shake' block to start the code running.
Vocabulary	touch-typing, keys, home row, shortcut, control, margins, orientation, portrait, landscape, page border, copy, paste, crop, text wrapping, format	password, two-step verification, online profile, account settings, privacy settings,	Sequence, run, before, after, execute, algorithm, order, action, timer, event, debug, hit event, conditional statement. Variable, conditional event, condition, repetition, loop, efficient, nested loop, always, if statement	data, table (layout), data set, data collection, input device, sensor, data logger, logging, data point, interval, analyse, data set, import, export, Analyse, review, conclusion	text, images, advantages, disadvantages, communicate, font, font style, template, landscape, portrait, orientation, placeholder, layout, content, desktop publishing, copy, paste, purpose	Micro: Bit, Make Code blocks, sequence, algorithms, programs, LED, output, loops, icon, animation, input, selection, accelerometer, sensor, variable, conditionals, infinite loop, logic

UKS2 Knowledge and Vocab Summary Cycle A

	Word Processing	Be Internet Legends - Be Internet Sharp, Alert & Brave for 9-11 (Internet Legends Planning 9-11: L7, L9, L11)	Espresso Coding Block Coding - Level 5/6	Computing Systems & Networks – Communication & Collaboration	Creating Media – Video Production	Espresso Coding HMTL
NC	• 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • 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.	• 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.	• 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.	• 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.
Concepts	Communicate Collect	Connect	Coding	Connect	Communicate	Coding
Assessment	Can pupils use Microsoft Word to produce an information sheet about _____ using keyboard shortcuts, charts and formatted pictures?	Can pupils demonstrate their understanding of how to stay safe online by completing the relevant 'Interland' activities?	Y5 – Can pupils use random numbers in combination with variables and conditional hit events to create a realistic pinball game? Y6 – Can pupils create a golf game by writing code that uses object properties, including passing the value of these to other objects?	Can pupils decide which method(s) of communication they think different scenario is best suited to?	Can you create a video using a range of different filming techniques and use a video editing program to review and improve the final production?	Can you create a web page about food, sequencing code and repeating a sequence to make my own web page including, headings, paragraphs and images?
Substantive Knowledge	• Know that touch typing is the most efficient way to type and it allows us to produce more work in a shorter amount of time. • Know that text can be edited by replacing words with synonyms by highlighting a word and right clicking. • Know that a wider range of synonyms can be identified by using the 'Thesaurus' feature. • Know that 'Ctrl' + 'Z' is a shortcut to undo. • Know that 'Ctrl' + 'C' is a shortcut to copy. • Know that 'Ctrl' + 'V' is a shortcut to paste. • Know that 'Ctrl' + 'X' is a shortcut to cut. • Know that 'Ctrl' + 'A' is a shortcut to cut. • Know that 'Ctrl' + 'S' is a shortcut to save. • Know that a table can be added to a document using the 'Insert' tab and then selecting 'Table' on Microsoft Word. • Know that a graph can be added to a document using the 'Insert' tab and then selecting 'Chart' on Microsoft Word. • Know that borders can be added to images on Microsoft Word by right-clicking and selecting the 'Style' function. • Know that images can be formatted to have shadow/reflection/glow/soft edges/appear 3D on Microsoft Word by right-clicking and selecting the 'Format Picture' function.	• Know that 'Being Internet Sharp means knowing what kind of information to put online to create a positive digital footprint and protect your online reputation. • Know that not posting embarrassing photos or videos online, not writing unkind or hurtful comments and posts online, being kind to others and checking privacy settings to make sure people can't see all your personal information are all ways to create a positive digital footprint and protect your online reputation. • Know that one of the ways that can help to ensure personal information is safe online is to use a 'strong' password. • Know that there are different strategies for refusing inappropriate online content and I can report any content that suggests someone has or is about to hurt themselves or others.	Year 5 (Level 5): • Know that values used in code affect the action of the object they relate to. • Know that computers use numbers to describe an object's properties such as heading, angle and speed. • Know that values can be changed and combined with conditional events to alter the properties of an object. • Know that 'working iteratively' is repeating a process again and again to improve something. • Know that an object's can include its X and Y coordination and positive and negative numbers can be used to alter the location of the object. • Know that different values for friction can be used to speed up or slow down an object. • Know that value of a variable can programmed to be generated randomly. • Know that the range of random numbers can be set in order to achieve a goal. Year 6 (Level 6): • Know code can be written to prompt the user to input a value for a variable. • Know that variables can be used to store amounts and complete calculations. • Know that 'Boolean' means a result that can only have one of two possible values. • Know that changing an object's property can be used to control the way it moves. • Know that code can be written to detect the properties of an object. • Know that code can be used to detect the speed and direction a pointer is moved when dragged and apply it to an object.	• Know that every time you access a website, send a message, or watch a video online, data is transferred over the internet. • Know that protocols are the rules that computers have for communicating with one another. • Know that all networked computers have an IP address and IP stands for Internet Protocol. • Know that every website address is known as its domain name and that every domain is hosted somewhere on a web server that has its own IP address. • Know that when a website is requested, the DNS searches the IP address associated with that website and directs the request to the correct location. • Know that computers send data across the internet in packets. • Know that public communication is visible to all and private communication may be restricted to certain individuals or groups. Many forms of internet communication have settings to define how public or private their service is for individual users.	• Know that video is the recording, reproducing, or broadcasting of moving visual images. • Know that a 'talking-head' section is a section of video where you can see the subject's head and body and the camera is in a fixed position. • Know that a 'panning' section is a section of video where the camera is hand-held and moves to show different things. • Know that a 'close-up' section is a section of video where the camera is hand-held and is close to the subject. It can involve filming one person, emphasising the expression on their face. • Know that a 'Mid-range' technique involves filming one person with some background detail. • Know that a 'Long shot' technique involves filming one person, showing their whole body and where they are. • Know that a 'Moving subject' technique involves a person moving from one place to another. • Know that a 'Side by side' technique involves filming two people at the same time. • Know that a 'high angle' technique makes a person look smaller than they are. • Know that a 'low angle' technique makes a person look bigger than they are. • Know that a 'normal angle' technique makes a person look their actual size. • Know that videos can be improved by reshooting or using a video editor to remove, trim, split and reorder.	• Know that all websites are written in a text language called HTML (Hyper Text Mark-up Language). • Know that we always use the angle brackets in HTML: < > • Know that a web page is composed of many different types of content such as graphics, text, pictures, headings, etc. • Know that a file ending .jpg is an image. • Know that that a paragraph in Computing is different, as we need to tell the computer how it should look. Know that an attribute is information about the style of an object or text, for instance it's font size or colour.

Disciplinary Knowledge	• I can use the rows on a keyboard to type letters accurately and at speed. • I can use the internet to research an interest and type up facts that I have learnt. • I can use a split screen to allow me to view 2 screens at the same time. • I can edit text by replacing words with synonyms. • I can use the edit toolbar to quickly change the font, size and colour of the text. • I can use a range of keyboard shortcuts to improve the speed at which I can type. • I can represent data in different ways using Microsoft Word. • I can add labels and a title to a graph/chart that I have created on Microsoft Word. • I can edit an image on Microsoft Word by changing the size and moving it around. • I can add a border to an image on Microsoft Word. • I can format an image using the 'Format Picture' function on Microsoft Word.	• I can identify ways to create a positive digital footprint. • I can explain why it is important to keep personal information private online. • I can describe ways to keep personal information private online by using safety tools and privacy settings. • I can describe how to find and ask for help if someone feels unsafe online. • I can identify situations of harassment or bullying online and evaluate what it means to be a bystander or helper. • I can respond using different options that feel safer and more appropriate. • I can explain what to do or say when they see upsetting stuff online – and understand I can refuse to watch or engage with it.	<u>Year 5 (Level 5):</u> • I can write code where buttons increase or decrease the speed, or stop an object when clicked and explain how it works. • I can use conditional hit events and values that represent angles in my code. • I can describe how I worked iteratively to solve a challenge and design a simulation. • I can design and create a program that uses co-ordinates and values in the code and explain how my program works. • I can write code including if statements to make an object rotate, and combine this with conditional events to make a game. • I can write code that uses a value to control the direction of an object and make it respond to friction. • I can write code that generates and displays random numbers which can be used to change an object's speed and heading and combine these with hit events. <u>Year 6 (Level 6):</u> • I can write code that prompts the user for an input and uses this to change the properties of an object and explain how I have done this. • I can write complex code which combines if statements and looping to make a game more difficult. • I can write code for a shopping till using variables to store and calculate values. • I can explain how the code for my stopwatch works, including both analogue and digital displays. • I can write code that uses conditional event and coordinates to control when an object moves. • I can write code that detects an object's properties and passes the value or set of parameters to other objects. • I can write code that passes the speed and/or direction a pointer is moved to an object on the screen.	• I can describe how computers use addresses to access websites. • I can explain that internet devices have addresses. • I can recognise that data is transferred using agreed methods. • I can explain that all data transferred over the internet is in packets. • I can explain that data is transferred over networks in packets. • I can identify and explain the main parts of a data packet. • I can explain that the internet allows different media to be shared. • I can recognise how to access shared files stored online. • I can send information over the internet in different ways. • I can explain how the internet enables effective collaboration. • I can identify different ways of working together online. • I can recognise that working together on the internet can be public or private. • I can choose methods of communication to suit particular purposes. • I can explain the different ways in which people communicate. • I can identify that there are a variety of ways to communicate over the internet. • I can compare different methods of communicating on the internet. • I can decide when I should and should not share information online. • I can explain that communication on the internet may not be private.	• I can compare features in different videos. • I can explain that video is a visual media format. • I can identify features of videos. • I can experiment with different camera angles. • I can identify and find features on a digital video recording device. • I can make use of a microphone. • I can capture video using a range of filming techniques. • I can review how effective my video is. • I can suggest filming techniques for a given purpose. • I can create and save video content. • I can decide which filming techniques I will use. • I can outline the scenes of my video. • I can explain how to improve a video by reshooting and editing. • I can select the correct tools to make edits to my video. • I can store, retrieve, and export my recording to a computer. • I can evaluate my video and share my opinions. • I can make edits to my video and improve the final outcome. • I can recognise that my choices when making a video will impact on the quality of the final outcome.	• I can identify opening and closing tags. • I can add paragraph tags and heading tags to create a simple web page. • I can understand how to control the size of text using HTML tags. • I can understand the vocabulary associated with HTML, including: angle brackets, tags, paragraphs and headings • I can select and sequence code, adding images and text to create a simple program in HTML • I can understand new vocabulary associated with this lesson including; images, jpgs, graphics • I can explain the meaning of tag abbreviation 'img src' and know what 'PNG' is short for. • I can use heading tags, paragraph tags and image tags together to create a web page and correctly select the appropriate tags to format the content. • I can present my understanding of terms and elements learned about HTML to a partner or class. • I can create a web page about food, sequencing code and repeating a sequence to make my own web page including, headings, paragraphs and images. • I can use my knowledge of HTML to debug the code.
Vocabulary	Format, crop, shortcut, right-click, toolbar, border, synonym, thesaurus	Digital footprint, reporting, refusing, harassment, privacy settings, online reputation	Properties, accelerate, decelerate, debug, iteratively, simulation, heading, decomposition, co-ordinates, y-axis, x-axis, friction, overlap, random, generate Pixel, convert, alignment, unit, scale, percentage, discount, parameter	protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS), packet, slide deck, Reuse, remix, collaboration	talking head, panning, close up, lens, mid-range, long shot, moving subject, high angle, low angle, normal angle, Static camera, zoom, pan, tilt, review, Import, split, trim, clip, edit, reshoot, export	HMTL, Hyper Text Mark-up Language, angle brackets, tags, paragraphs, headings, JPG, debug, attribute

UKS2 Knowledge and Vocab Summary Cycle B

	Word Processing	Be Internet Legends - Be Internet Secure, Kind & Brave for 9-11 (Internet Legends Planning 9-11: L8, L10, L12)	Espresso Coding Block Coding - Level 3/4	Data and Information – Flat-file Databases	Coding – Micro Bits	Creating Media – 3D Modelling
NC	• 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • 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.	• 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.	• 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.	Computing: • 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. DT • apply their understanding of computing to program, monitor and control their products. Music • improvise and compose music for a range of purposes using the inter-related dimensions of music.	• 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
Concept	Communicate Collect	Connect	Coding	Collect Communicate	Coding	Communicate
Assessment	Can pupils use Microsoft Word to produce an information sheet about North America using keyboard shortcuts, charts and formatted pictures?	Can pupils demonstrate their understanding of how to stay safe online by completing the relevant 'Interland' activities?	Y5 – Can pupils use random numbers in combination with variables and conditional hit events to create a realistic pinball game? Y6 – Can pupils create a golf game by writing code that uses object properties, including passing the value of these to other objects?	Can pupils use a real-life database about flights to answer questions and find a flight that meets the criteria given?	Can pupils program a Micro: bit to make a music making device?	Can pupils design, make and evaluate a 3D model using a range of tools and techniques?
Substantive Knowledge	• Know that touch typing is the most efficient way to type and it allows us to produce more work in a shorter amount of time. • Know that text can be edited by replacing words with synonyms by highlighting a word and right clicking. • Know that a wider range of synonyms can be identified by using the 'Thesaurus' feature. • Know that 'Ctrl' + 'Z' is a shortcut to undo. • Know that 'Ctrl' + 'C' is a shortcut to copy. • Know that 'Ctrl' + 'V' is a shortcut to paste. • Know that 'Ctrl' + 'X' is a shortcut to cut. • Know that 'Ctrl' + 'A' is a shortcut to cut. • Know that 'Ctrl' + 'S' is a shortcut to save. • Know that a table can be added to a document using the 'Insert' tab and then selecting 'Table' on Microsoft Word. • Know that a graph can be added to a document using the 'Insert' tab and then selecting 'Chart' on Microsoft Word. • Know that borders can be added to images on Microsoft Word by right-clicking and selecting the 'Style' function. • Know that images can be formatted to have shadow/reflection/glow/soft edges/appear 3D on Microsoft Word by right-clicking and selecting the 'Format Picture' function.	• Know that there are many different types of online scams. • Know that pop-ups you didn't click on appearing and asking for passwords and personal information, weird photos on social media and emails from strange addresses telling you that you've won a prize are all example signs of online scams. • Know that a phishing email is a fake email designed to deceive you into revealing personal information and they should always be reported. • Know that kindness online matters because being unkind could hurt someone in the same way as it does face-to-face. • Know that if someone is being unkind, you can report/block/tell a trusted adult. • Know that we can stand to online bullies by reporting mean or bullying behaviour, not passing on hurtful message, setting a good example by being friendly and kind to others and not encouraging nasty behaviour by 'liking' mean posts online.	Year 5 (Level 5): • Know that values used in code affect the action of the object they relate to. • Know that computers use numbers to describe an object's properties such as heading, angle and speed. • Know that values can be changed and combined with conditional events to alter the properties of an object. • Know that 'working iteratively' is repeating a process again and again to improve something. • Know that an object's can include its X and Y coordination and positive and negative numbers can be used to alter the location of the object. • Know that different values for friction can be used to speed up or slow down an object. • Know that value of a variable can programmed to be generated randomly. • Know that the range of random numbers can be set in order to achieve a goal. Year 6 (Level 6): • Know code can be written to prompt the user to input a value for a variable. • Know that variables can be used to store amounts and complete calculations. • Know that 'Boolean' means a result that can only have one of two possible values. • Know that changing an object's property can be used to control the way it moves. • Know that code can be written to detect the properties of an object. • Know that code can be used to detect the speed and direction a pointer is moved when dragged and apply it to an object.	• Know that a database is a collection of data that is stored in a computer and that can easily be used and added to. • Know that 'data' can be letters, words, numbers, dates, images, sounds, etc. • Know that data can be sorted to identify the answers to questions. • Know that 'Search' function can be used to quickly identify the answers to questions. • Know that we can narrow the records by searching for more than one criteria using 'And'. • Know that we can widen the records by searching for more than one criteria using 'Or'. • Know that data can be presented in range of different and that different charts are more appropriate for different sets of data.	• Know that it is important to consider the target audience when writing an algorithm. • Know that a micro: bit can be programmed to play different musical phrases when certain conditions are met. • Know that speakers or headphones must be attached to a micro: bit to play music. • Know that a micro: bit can be used to help people who find playing musical instruments difficult.	• Know that computers can be used to model real-life items in 3D to help can help the design process and enable people to view parts of objects in detail. • Know that complex 3D models are composed of many shapes combined. • Know that 3D shapes can be resized using the square handles or lifted/lowered using the cone handles. • Know that 3D Printers can create physical versions of computers models by building layers of plastic filament which are heated and fed through a nozzle. • Know that placeholders can be used to create holes or hollow out 3D shapes. • Know that architects use 3D modelling software to create their designs so that they can be viewed from different perspectives.

Disciplinary Knowledge	• I can use the rows on a keyboard to type letters accurately and at speed. • I can use the internet to research an interest and type up facts that I have learnt. • I can use a split screen to allow me to view 2 screens at the same time. • I can edit text by replacing words with synonyms. • I can use the edit toolbar to quickly change the font, size and colour of the text. • I can use a range of keyboard shortcuts to improve the speed at which I can type. • I can represent data in different ways using Microsoft Word. • I can add labels and a title to a graph/chart that I have created on Microsoft Word. • I can edit an image on Microsoft Word by changing the size and moving it around. • I can add a border to an image on Microsoft Word. • I can format an image using the 'Format Picture' function on Microsoft Word.	• I can describe ways to critically evaluate what we see on social media. • I can explain how social media can mislead or misrepresent reality. • I can identify different types of online scams people our age may experience, including 'phishing'. • I can identify sources of support for someone who is worried about anything online. • I can demonstrate ways to build positive and healthy online relationships and friendships. • I can describe strategies I can use to respond to hurtful online behaviour, in ways that keep me safer and healthier. • I can identify sources of support that can help friends and peers if they are experiencing hurtful behaviour online. • I can be brave when identifying things online I do not like, knowing how to tackle them and how to report them.	<u>Year 5 (Level 5):</u> • I can write code where buttons increase or decrease the speed, or stop an object when clicked and explain how it works. • I can use conditional hit events and values that represent angles in my code. • I can describe how I worked iteratively to solve a challenge and design a simulation. • I can design and create a program that uses co-ordinates and values in the code and explain how my program works. • I can write code including if statements to make an object rotate, and combine this with conditional events to make a game. • I can write code that uses a value to control the direction of an object and make it respond to friction. • I can write code that generates and displays random numbers which can be used to change an object's speed and heading and combine these with hit events. <u>Year 6 (Level 6):</u> • I can write code that prompts the user for an input and uses this to change the properties of an object and explain how I have done this. • I can write complex code which combines if statements and looping to make a game more difficult. • I can write code for a shopping till using variables to store and calculate values. • I can explain how the code for my stopwatch works, including both analogue and digital displays. • I can write code that uses conditional event and coordinates to control when an object moves. • I can write code that detects an object's properties and passes the value or set of parameters to other objects. • I can write code that passes the speed and/or direction a pointer is moved to an object on the screen.	• I can create a database using cards. • I can explain how information can be recorded. • I can order, sort, and group my data cards. • I can choose which field to sort data by to answer a given question. • I can explain what a field and a record is in a database. • I can navigate a flat-file database to compare different views of information. • I can combine grouping and sorting to answer specific questions. • I can explain that data can be grouped using chosen values. • I can group information using a database. • I can choose multiple criteria to answer a given question. • I can choose which field and value are required to answer a given question. • I can outline how 'AND' and 'OR' can be used to refine data selection. • I can explain the benefits of using a computer to create charts. • I can refine a chart by selecting a particular filter. • I can select an appropriate chart to visually compare data. • I can ask questions that will need more than one field to answer. • I can present my findings to a group. • I can refine a search in a real-world context.	• I can read, interpret and evaluate a range of algorithms. • I can write algorithms for a given audience. • I can use my existing knowledge to improve programs. • I can write and debug musical programs. • I can experiment (tinker) with the micro: bit to make music. • I can identify patterns in an algorithm. • I can make predictions about outputs based on reading code. • I can evaluate a micro: bit as a device for making music,	• I can add 3D shapes to a project. • I can move 3D shapes relative to one another. • I can view 3D shapes from different perspectives. • I can lift/lower 3D objects. • I can recolour a 3D object. • I can resize an object in three dimensions. • I can duplicate 3D objects. • I can group 3D objects. • I can rotate objects in three dimensions. • I can accurately size 3D objects. • I can combine a number of 3D objects. • I can show that placeholders can create holes in 3D objects. • I can analyse a 3D model. • I can choose objects to use in a 3D model. • I can combine objects in a design. • I can construct a 3D model based on a design. • I can explain how my 3D model could be improved. • I can modify my 3D model to improve it.
Vocabulary	Format, crop, shortcut, right-click, toolbar, border, synonym, thesaurus	Misrepresent, online scam, phishing, report, block, pop-up,	Properties, accelerate, decelerate, debug, iteratively, simulation, heading, decomposition, co-ordinates, y-axis, x-axis, friction, overlap, random, generate Pixel, convert, alignment, unit, scale, percentage, discount, parameter	database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter	Phrases, algorithm, orchestra, conductor, evaluation, decomposition, modify.	Perspective, handles, resize, recolour, work plane, placeholder, hollow, duplicate, grouping, ungrouping, construct, evaluate, modify

Progression of Computing Skills

	EYFS (Milestone 1)	KS1 (Milestone 2)	LKS2 (Milestone 3)	UKS2 (Milestone 4)
Code	•Develop their small motor skills so that they can use a range of technology competently, safely and confidently. •Following instructions as apart of practical activities and games and learning to 'debug' when things go wrong. •Learning to give simple instructions. •Experimenting with programming a Bee/Bot giving simple commands.	• Control motion by specifying the number of steps to travel, direction and turn. • Add text strings, show and hide objects and change the features of an object. • Select sounds and control when they are heard, their duration and volume. • Control when drawings appear and set the pen colour, size and shape. • Specify user inputs (such as clicks) to control events. • Specify the nature of events (such as a single event or a loop). • Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).	• Use specified screen coordinates to control movement. • Set the appearance of objects and create sequences of changes. • Create and edit sounds. Control when they are heard, their volume, duration and rests. • Control the shade of pens. • Specify conditions to trigger events. • Use IF THEN conditions to control events or objects. • Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions). • Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables. • Use the Reporter operators () + (), () - (), () * () and () / () to perform calculations.	• Set IF conditions for movements. Specify types of rotation giving the number of degrees. • Change the position of objects between screen layers (send to back, bring to front). • Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation. • Combine the use of pens with movement to create interesting effects. • Set events to control other events by 'broadcasting' information as a trigger. • Use IF THEN ELSE conditions to control events or objects. • Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions. • Use lists to create a set of variables. • Use the Boolean operators () < (), () = (), () > (), ()and(), ()or() and Not() to define conditions. • Use the Reporter operators () + (), () - (), () () and () / () to perform calculations. Pick Random () to (), Join () (), Letter () of (), Length of (), () Mod () - this reports the remainder after a division calculation, Round (), () of ().
Connect	• When using the internet, understand what to do if they come across something that worries them or makes them feel uncomfortable. • Know and talk about the different factors that support their overall health and wellbeing such as sensible amounts of 'screen time'.	• Participate in class social media accounts. • Understand online risks and the age rules for sites. • Learning to log in and log out.	• Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term 'copyright'. • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work.	• Collaborate with others online on sites approved and moderated by teachers. • Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used.
Communicate	• Explore and use technology as an artistic tool to express their ideas and feelings. • Can create shapes and text on a screen. • Recognising that a range of technology is used in places such as homes and schools. • Learning what a keyboard is and how to locate relevant keys. • Learning what a mouse is and developing basic mouse skills such as moving and clicking	• Use a range of applications and devices in order to communicate ideas, work and messages.	• Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	• Choose the most suitable applications and devices for the purposes of communication. • Use many of the advanced features in order to create high quality, professional or efficient communications.
Collect	• Can move and sort objects on a screen. • Representing data through sorting and categorising objects in unplugged scenarios	• Use simple databases to record information in areas across the curriculum.	• Devise and construct databases using applications designed for this purpose in areas across the curriculum.	• Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.