Computing Progression Statements

Progression of skills for Early Years and Key Stage 1:

Computing Concepts	National Curriculum	EYFS	Y1	Y2
Computing Systems	KS 1.5 Recognise common uses of information technology beyond school	• Help adults operate technology and ICT in the classroom • Independently operating simple technology • Begin to identify different digital devices in school, e.g. IWBs, iPads, computers, laptops, talking tins and other audio recording/playback devices.	• Identify technology • Identify a computer and its main parts	• Identify information technology in the home, school and beyond • Explain how information technology benefits us • Recognise the uses and features of information technology
Programming	KS 1.1 Understand what algorithms are	• Understand that instructions lead to a specific outcome. • Order steps. • Know directional words forward, backward, turn, left, right. • Understand that we control computers • Input = Output	• Begin to understand an algorithm is a set of instructions to achieve a specific purpose • Combine forwards and backwards commands to make a sequence • Combine four direction commands to make sequences • Understand that we control computers by giving them instructions	• Describe a series of instructions as a sequence • Explain that a sequence of commands has an outcome • Combine four directions commands to make increasingly more complex sequences • Understand that computers have no intelligence and we have to program them to do things
	KS 1.1 Understand how algorithms are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions	• Press buttons on a floor robot and talk about movements	• Choose a command for a given purpose • Show a series of commands can be joined together • Understand that the order of instructions in an algorithm is important	• Explain that a sequence of commands has a start • Explain what happens when we change the order of commands • Understand that instructions in an algorithm need to be in order, clear and unambiguous
	KS 1.2 Create and debug simple programs	• Input a short sequence of instructions to control a device • Try alternative approaches to achieve a goal	• Give a sequence of instructions to a floor robot. • Begin to debug instructions when floor robot does not reach the intended destination	• Create a simple program on screen, correcting any errors, with a particular goal or purpose in mind. • Use the word debug to correct mistakes in an algorithm
	KS 1.3 Use logical reasoning to predict the behaviour of simple programs	• recognise when the expected outcome has been achieved or not	• Begin to predict what will happen for a short sequence of instructions in a program • Understand that we control computers by giving them instructions	• Predict the outcome of a sequence • Compare prediction to the program outcome
Data & Information	KS 1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Access content in a range of formats, e.g. image, video, audio • Complete some simple counting and recording tasks using digital devices, e.g. image, video, audio, mark making. • Answer some basic questions about information displayed in images, e.g. more or less	• Label objects • Identify that objects can be counted • Count objects with same properties • Compare groups of objects • Describe objects in different ways	• Recognise that objects can be counted and compared using tally charts • Select objects by attribute and make comparisons • Recognise objects can be represented as pictures • Create a pictogram • Explain that information can be presented using a computer
Creating Media	KS 1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Independent use of touchscreens (IWB and iPads) for a variety of purposes. • Introduced to keyboards and the computer mouse later in the year. • Use a touchscreen (IWB & iPad), computer keyboard, computer mouse as simple input controls.	• Use a mouse in different ways • Identify and find keys on a keyboard • Add and remove text using basic typing skills (including use of space bar, backspace to delete and basic, age appropriate punctuation) • Create and save work on Seesaw independently.	• Continue to practise mouse skills independently • Identify and find keys on a keyboard with increased confidence and speed • Type capital letters • Change font, style (bold, italic and underline) and size of text

Computing Concepts	National Curriculum	EYFS	Y1	Y2
Creating Media	KS 1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Use technology to explore digital content • Use QR codes to access online resources, with support. • Introduced to Seesaw and how to login with a QR code, later in the year. • Begin to create content in their personal learning journal with support, later in the year.	• Use QR codes to access online resources, independently. • Sign-in to a school PC, with support • Begin to save work to the appropriate network location, with support, to Y:\All Years Share • Begin to retrieve and edit work, with support, from Y:\All Years Share • Sign-in to Seesaw independently with a class QR code. • Create content and complete Activities on Seesaw, independently.	• Sign-in to a school PC using the appropriate login independently. • With support, sign-out or shut-down a school PC. • Save, retrieve and edit work from the appropriate network location Y:\All Years Share with increasing independence • Upload images, sound or video files to Seesaw, with support.
		• Create simple digital content, e.g. digital art, capture photographs or video. • Choose media to convey information.	• Create/edit a drawing using a range of 'tools' such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape; • Explain why tools were chosen and used	• Add and resize images (including insert clip art/copy & paste an image) • Capture/edit photograph using a range of 'tools' • Use software to create and edit digital music for a purpose • Explain and begin to justify why tools were chosen and used
Online Safety	KS 1.6 Use technology safely and respectfully,	**1. Self-image and Identity:** I can recognise that anyone can say "no" / "please stop" / "I'll tell" / "I'll ask" to somebody who makes them feel sad, uncomfortable, embarrassed or upset. **2. Online relationships:** I can give examples of how I (might) use technology to communicate with people I know. **7. Privacy and security:** • I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location). • I can describe who would be trustworthy to share this information with; I can explain why they are trusted. **8. Copyright and ownership:** • I know that work I create belongs to me. • I can name my work so that others know it belongs to me.	**1. Self-image and Identity:** I can recognise that there may be people online who could make someone feel sad, embarrassed or upset. **2. Online relationships:** • I can give examples of when I should ask permission to do something online and explain why this is important. • I can explain why it is important to be considerate and kind to people online and to respect their choices. **8. Copyright and ownership:** • I can explain why work I create using technology belongs to me. • I can save my work under a suitable title / name so that others know it belongs to me (e.g. filename, name on content). • I understand that work created by others does not belong to me even if I save a copy.	**1. Self-image and Identity:** • I can explain how other people may look and act differently online and offline. • I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help **2. Online relationships:** • I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky, e.g. email, online gaming, pen-pal in another school / country. **4. Online bullying:** I can explain what bullying is, how people may bully others and how bullying can make someone feel. **5. Managing online information:** I can explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'. **8. Copyright and ownership:** I can recognise that content on the internet may belong to other people.

Computing Concepts	National Curriculum	EYFS	Y1	Y2
Online Safety	KS 1.6 keeping personal information private;	**5. Managing online information:** • I can talk about how to use the internet as a way of finding information online. • I can identify devices I could use to access information on the internet.	**3. Online reputation:** I can describe what information I should not put online without asking a trusted adult first. **7. Privacy and security:** I can recognise more detailed examples of information that is personal to someone, e.g. where someone lives and goes to school, family names.	**2. Online relationships:** I can explain who I should ask before sharing things about myself or others online. **3. Online reputation:** I can describe how anyone's online information could be seen by others. **7. Privacy and security:** • I can explain how passwords can be used to protect information, accounts and devices • I can explain and give examples of what is meant by 'private' and 'keeping things private'.
	KS 1.6 identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	• Be able to talk about and begin to identify trusted adults in their own lives (home and school). **6. Health, wellbeing and lifestyle:** • I can identify rules that keep us safe and healthy in and beyond the home when using technology • I can give some simple examples of these rules. *[Smartie the Penguin's rules, "stop & think and tell someone"]*	**1. Self-image and Identity:** If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help. **6. Health, wellbeing and lifestyle:** I can explain rules to keep myself safe when using technology both in and beyond the home. **7. Privacy and security:** I can explain that passwords are used to protect information, accounts and devices.	• Recognise and locate the SMART rules poster. • Recall some of the SMART rules for online safety. **2. Online relationships:** • I can describe different ways to ask for, give, or deny my permission online and can identify who can help me if I am not sure. • I can identify who can help me if something happens online without my consent. **3. Online reputation:** I know who to talk to if something has been put online without consent or if it is incorrect. **4. Online bullying:** I can talk about how anyone experiencing bullying can get help. **6. Health, well-being and lifestyle:** I can say how online safety rules (home and school) can help anyone accessing online technologies.

Progression of skills for Key Stage 2:

Computing Concepts	National Curriculum	Y3	Y4	Y5	Y6
Computing Systems	KS 2.4 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	• Explain how a computer network can be used to share information • Explore how digital devices can be connected • Recognise the physical components of a network • Explain how digital devices function • Identify input and output devices. • Begin to understand that computers follow a process; (Input - Process - Output)	• Describe how networks physically connect to other networks • Recognise how networked devices make up the internet • describe how content can be added and accessed on the World Wide Web • Recognise how the content of the WWW is created and shared by people • Describe the current limitations of World Wide Web media	• Explain that computers can be connected together to form systems • Recognise the role of computer systems in our lives • Explain how sharing information online lets people in different places work together • Contribute to a shared project online • Evaluate different ways of working together online	• Recognise how information is transferred over the internet • Identify appropriate methods of online communication in different contexts and for different purposes.
	KS 2.5 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• Search for information in a single site • Understand that search engines select pages according to keywords found in the content	• Use a standard search engine to find information • Understand that search engines rank pages according to relevance.	• Use filters to make more effective use of a standard search engine • Understand that search engines use a cached copy of the crawled web to select and rank results	• Use of a range of search engines appropriate to finding information that is required • Understand that search engines rank pages based on the number and quality of inbound links
Programming	KS 2.1 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	• Create a sequence of commands using a block language to produce a given outcome • Debug errors to accomplish specific goal	• Plan a program using a block language which includes appropriate loops to produce a given outcome • Debug errors in increasingly complex programs to accomplish specific goal	• Plan a program which includes selection to produce a given outcome • Debug errors in increasingly complex programs to accomplish specific goal	• Plan a program which includes variables to produce a given outcome • Debug errors in increasingly complex programs to accomplish specific goal
	KS 2.1 Solve problems by decomposing them into smaller parts	• Work with others to decompose a problem into smaller steps in planning a project	• Independently decompose a problem into smaller steps in planning a project	• Plan a solution to a problem using decomposition	• Solve problems using decomposition, tackling each part separately
	KS 2.2 Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	• Explain the order (sequence) of commands can affect the outcome (same commands, different order = same or different outcome) • Identify different sequences can achieve the same outcome	• Identify patterns (repetition) in a Sequence • Understand repetition in programming is also called looping • Identify a loop in a program • Understand, identify and justify when to use 'infinite' or 'count-controlled' loops • Explain the importance in instruction order in a loop	• Define that conditional statements (selection) are used in computer programs • Explain a loop can stop when a condition is met (number of times or event) • Explain a that program flow can branch according to a condition • Use a condition in an if…then… statement to produce a given outcome	• Define 'variable' as something that is changeable • Explain that a variable has a name and a value • Identify a variable in an existing program • Use a variable in a conditional statement to control the flow of a program
	KS 2.3 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	• Explain simple, sequence-based algorithm independently • Use logical reasoning to detect errors in programs	• Explain an algorithm using sequence and repetition independently • Use logical reasoning to detect and correct errors in programs	• Explain an algorithm using sequence, repetition and selection independently • Use logical reasoning to detect errors in increasingly complex programs	• Clearly and concisely explain algorithms using sequence, repetition, selection and variables independently • Use logical reasoning to detect errors in Increasingly complex programs

Computing Concepts	National Curriculum	Y3	Y4	Y5	Y6
Data & Information	KS 2.6 Collecting, analysing, evaluating and presenting data and information	• Identify object attributes needed to collect relevant data • Create a branching database • Identify objects using a branching database • Compare information shown in a pictogram with a branching database • Explain that data can be used to answer questions	• Collect data using a digital device • Recognise that a sensor can be used as an input device for data collection • Use a larger data set to find information • Use a computer program to sort data by one attribute • Export information and present data in a table and a graph	• Use a form to collect information • Navigate a flat-file database • Apply knowledge of a database to ask and answer real-world questions • Design a structure for a flat-file database • Choose tools to select and analyse data to answer questions • Select an appropriate graph to visually compare data • Choose suitable ways to present information	• Identify questions that can be answered using data • Create a spreadsheet for a purpose • Apply a formula that can be used to produce calculated data • Recognise data can be calculated using different operations • Evaluate results in comparison to the question asked • Choose suitable ways to presents data
Creating Media	KS 2.6 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	• Sign-in to a school computer (PC or laptop), with appropriate login; sign-out and shut down school computers independently. • On Seesaw, create content, complete Activities, uploading images, sound or video files independently. • Type with increased confidence and speed using age appropriate punctuation • Begin to combine text and images to share a message • Change orientation of images • Consider how different layouts can suit different purposes • Use return to create paragraphs • Change orientation of text • Wrap text around an image • Recognise a document can be formatted with placeholders	• Save, retrieve and edit work from the appropriate network location Y:\All Years Share independently • Begin to contribute to content saved to the Seesaw learning journal by making appropriate comments/feedback on their own and work of their peers. • Type with increased confidence and speed using age appropriate punctuation • Use a digital device manipulate images • Recognise images can be changed for different purposes • Use the most appropriate tool for a particular purpose • Consider the impact of changes made on the quality of the image	• Login to Seesaw using a personal Google sign-in • Contribute to content saved to the Seesaw learning journal by making appropriate comments/feedback on their own and work of their peers. • Create and name new folders appropriately in Y:\ All Years Share. • Type with increased confidence and speed using age appropriate punctuation • Identify the features of a good video • Plan a video production using a story board • Use a computer to make a video • Recognise a video can be improved through editing • Consider the impact of changes made on the quality of the video	• Type with increased confidence and speed using age appropriate Punctuation • Recognise components of a webpage layout • Create a webpage including text, images, hyperlinks and embedded content • Understand the need for a navigation path • Create 3D graphical objects on a computer* • Alter the view of a 3D space* • Modify 3D objects* • Combine 3D objects to create desired effect* • Apply blank 3D objects as placeholders to create holes*

*2023 3D modelling taught with TinkerCad

Computing Concepts	National Curriculum	Y3	Y4	Y5	Y6
Online Safety	KS 2.7 Use technology safely, respectfully and responsibly;	**1. Self-image and identity:** • I can explain what is meant by the term 'identity'. • I can explain ways in which someone might change their identity depending on what they are doing online, e.g. gaming; using an avatar; social, media, and why. **2. Online relationships:** • I can explain how someone's feelings can be hurt by what is said or written online. • I can explain the importance of giving and gaining permission before sharing things online; how the principles of sharing online is the same as sharing offline e.g. sharing images and videos. **3. Online reputation:** I can give examples of what anyone may or may not be willing to share about themselves online. I can explain the need to be careful before sharing anything personal. **5. Managing online information:** • I can explain the difference between a 'belief', an 'opinion' and a 'fact' and can give examples of how and where they might be shared online, e.g. in videos, memes, posts, news stories etc. • I can explain that not all opinions shared may be accepted as true or fair by others, e.g. monsters under the bed. **6. Health, well-being an lifestyle:** I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable, e.g. age restricted gaming or web sites. **7. Privacy and security:** I can describe simple strategies for creating and keeping passwords private.	**1. Self-image and identity:** • I can explain how my online identity can be different to my offline identity. • I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them. **2. Online relationships:** • I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours. • I can describe strategies for safe and fun experiences in a range of online social environments, e.g. livestreaming, gaming platforms. **5. Managing online information:** • I can analyse information to make a judgement about probable accuracy and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others. • I can explain what is meant by fake news e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn't. **7. Privacy and security:** • I can describe strategies for keeping personal information private, depending on context. • I can explain that internet use is never fully private and is monitored, e.g. adult supervision.	**1. Self-image and identity:** I can demonstrate how to make responsible choices about having an online identity, depending on context **2. Online relationships:** I can describe some of the ways people may be involved in online communities and describe how they might collaborate constructively with others and make positive contributions, e.g. gaming communities or social media groups. **3. Online reputation:** I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect. **5. Managing online information:** • I can evaluate digital content and can explain how to make choices about what is trustworthy e.g. differentiating between adverts and search results. • I can describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful. • I can explain what is meant by a 'hoax'. I can explain why someone would need to think carefully before they share. **6. Health, well-being and lifestyle:** I can describe ways technology can affect health and well-being both positively, e.g. mindfulness apps, and negatively. **7. Privacy and security:** • I can explain what a strong password is and demonstrate how to create one. • I can explain what app permissions are and can give some examples.	**2. Online relationships:** • I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not. • I can explain that taking or sharing inappropriate images of someone, e.g. embarrassing images), even if they say it is okay, may have an impact for the sharer and others; and who can help if someone is worried about this. **3. Online reputation:** I can explain strategies anyone can use to protect their 'digital personality' and online reputation, including degrees of anonymity. **5. Managing online information:** • I can explain how search engines work and how results are selected and ranked • I can explain how to use search technologies effectively. **6. Health, well-being and lifestyle:** I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. **7. Privacy and security:** • I can explain what to do if a password is shared, lost or stolen. • I can describe simple ways to increase privacy on apps and services that provide privacy settings.

Computing Concepts	National Curriculum	Y3	Y4	Y5	Y6
Online Safety	KS 2.7 recognise acceptable/unacceptable behaviour;	**1. Self-image and identity:** I can explain how people can represent themselves in different ways online. **4. Online bullying:** I can describe appropriate ways to behave towards other people online and why this is important. **8. Copyright and ownership:** I can explain why copying someone else's work from the internet without permission isn't fair and can explain what problems this might cause.	**1. Self-image and identity:** I can explain that others online can pretend to be someone else, including my friends, and can suggest reasons why they might do this. **4. Online bullying:** • I can describe ways people can be bullied through a range of media, e.g. image, video, text, chat. • I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation). **8. Copyright and ownership:** • When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. • I can give some simple examples of content which I must not use without permission from the owner, e.g. videos, music, images.	**1. Self-image and identity:** I can explain how identity online can be copied, modified or altered. **4. Online bullying:** I can describe how what one person perceives as playful joking and teasing (including 'banter') might be experienced by others as bullying. **8. Copyright and ownership:** I can give examples of content that is permitted to be reused and know how this content can be found online.	**1. Self-image and identity:** I can identify and critically evaluate online content relating to gender, race, religion, disability, culture and other groups, and explain why it is important to challenge and reject inappropriate representations online. **8. Copyright and ownership:** I can demonstrate the use of search tools to find and access online content which can be reused by others.
	KS 2.7 identify a range of ways to report concerns about content and contact.	**3. Online reputation:** I can explain who someone can ask if they are unsure about putting something online. **5. Managing online information:** I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened.	• Recall most of the SMART rules for online safety. **4. Online bullying:** I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.	**2. Online relationships:** I can explain how someone can get help if they are having problems and identify when to tell a trusted adult. **4. Online bullying:** I can identify a range of ways to report concerns and access support both in school and at home about online bullying.	• Recall the SMART rules for online safety and give examples of what they mean. **1. Self-image and identity:** • I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help, both on and offline. • I can explain the importance of asking until I get the help needed. **5. Managing online information:** • I can identify, flag and report inappropriate content.

Adapted from this original source to reflect the Harefield Primary Computing Curriculum.