**National Curriculum:**

The national curriculum for computing aims to ensure that all pupils:

* can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
* can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
* can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
* are responsible, competent, confident and creative users of information and communication technology.

**Key stage 1**

**Pupils should be taught to:**

* understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
* create and debug simple programs
* use logical reasoning to predict the behaviour of simple programs
* use technology purposefully to create, organise, store, manipulate and retrieve digital content
* recognise common uses of information technology beyond school
* use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

**Key stage 2**

**Pupils should be taught to:**

* design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
* use sequence, selection, and repetition in programs; work with variables and various forms of input and output ♣ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
* understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration
* use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
* select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
* use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

**EYFS**

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| **Vocabulary**  **By the end of EYFS they will be able touse the words:** | **Outcomes for the end of EYFS. Children will be able to:** |
| App  Computer  Device  Information  Interactive Whiteboard  Internet  iPad  Keyboard  Laptop  Mobile phone  Mouse  Online Safety  Program  Tablet  Technology | **Fine Motor Skills**  Develop their fine motor skills so that they can use a range of tools competently, safely and confidently  **Managing Self**  Be confident to try new activities and show independence, resilience and perseverance in the face of challenge  Explain the reasons for rules, know right from wrong and try to behave accordingly.  **Understanding the World**  Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class. |

**Cycle A, Spring Term 1**

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| **Year 1**  **Computer science** | **Key Objective** | **Skills** | **Key Questioning** | **Key Vocabulary** | **Lesson context (Teacher notes)** |
| **Week 1** | Online Safety  E-Safety  Responsible  (Yr1 Soc)  I will know and understand how I and adults use the internet.  I will know about different ways in which I can spend my time | I will be able to talk about the devices / internet and why I might use them at home. | What is the internet?  How do I use the internet?  How should you behave when using the internet?  What rules do we have for working safely online?  Why might it not be a good idea to spend lots of time looking at a screen? | Trusted adult  Online  Devices |  |
| **Week 2** | Code.org -L7  Loops with Harvester  I will be able to break down a long sequence of instructions into the smallest repeatable sequence possible.  I will be able to create a program for a given task which loops a sequence of commands.  I will be able to employ a combination of sequential and looped commands to reach the end of a maze.  I will be able to identify the benefits of using a loop structure instead of manual repetition. | In this **skill-building** lesson, students will help the harvester collect crops by using loops  I will be able to add instructions to existing loops, gather repeated code into loops, and recognize patterns that need to be looped. | What are loops?  Why do we use them?  How did loops make your program easier to write?  Can you figure out how many blocks they use with a loop vs. without a loop. | Loop  Repeat |  |
| **Week3** | Code.org -L8  Loops with Laurel  I will be able to break down a long sequence of instructions into the smallest repeatable sequence possible.  I will be able to Identify the benefits of using a loop structure instead of manual repetition | In this **skill-building** lesson, students continue learning the concept of loops  I will be able to o put multiple blocks inside of a repeat as I try to collect as much treasure as possible | *What are loops?*  *Why do we use them?* | Loop  Repeat |  |
| **Week 4** | Code.org -L9  Drawing gardens with loops  I will be able to count the number of times an action should be repeated and represent it as a loop.  I will be able to create a program that draws complex shapes by repeating simple sequences.  I will be able to decompose a shape into its largest repeatable sequence. | In this **skill-building** lesson, students learn to draw images by looping simple sequences of instructions. Here, students use loops to create patterns.  I will test my critical thinking skills by evaluating given code and determining what needs to be added in order to solve the puzzle. | *How would you explain to someone how to draw that pattern?*  *How could you draw this using a loop?* | Loop |  |
| **Week 5** | Code.org -L10  The Right App  I will be able to apply empathy and creativity to design technology for others.  I will be able to list several different examples of smartphone apps.  I will be able to recommend technology to others based on their unique needs | In this **exploratory** lesson, students empathize with several fictional smartphone users to help them find the “right app” that addresses their needs. | What else they can you do on a smartphone.  Discuss real-world examples of how apps can help people solve problems.  Who is this app made for?  What does the user like?  What problem do they have, or what do they want?  Is this "the right app" for them? Why or why not? | Smartphone  Device  App  Technology |  |
| **Week 6** | Code.org -L11  The Big Event Jr  I will be able to practice differentiating pre-defined actions and event-driven ones.  I will be able to recognize actions of the teacher as signals to initiate commands.  I will be able to repeat commands given by an instructor.  . | this **context-setting** lesson, the class will experience the concept of events through a game where they move or shout when you press buttons on a giant remote. | Why do we need to be able to handle events in a program?  What are some other kinds of events that you can think of? | Event  Event controller  Button  Reaction |  |

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| **Year 2/3**  **Computer science** | **Key Objective** | **Skills** | **Key Questioning** | **Key Vocabulary** | **Lesson context (Teacher notes)** |
| **Week 1** | Online Safety -  Safe searchers  (SoC 2.3)  I will begin to understand how a search engine works and how to get results that are relevant and appropriate to their query. | Choose an appropriate and safe search engine. | How do you know if the site is safe?  What should you do if you come across something inappropriate on the internet? Who should you tell? | Trusted adult  Search engine  Search box |  |
| **Week 2** | Code.org Lesson 8  Build a Star Wars Game  I will be able to create dance animations with code  I will develop a program that respond to timed events  I will develop a program that respond to user input | In this **skill-building** lesson, students will program an interactive dance party. |  | **Event** - An action that causes something to happen. |  |
| **Week3** | Code.org Lesson 9  Dance Party  I will be able to create dance animations with code  Develop programs that respond to timed events  Develop programs that respond to user input | In this **skill-building** lesson, students will program an interactive dance party. |  | **Event** - An action that causes something to happen.  **Program** - An algorithm that has been coded into something that can be run by a machine.  **code** - (v) to write code, or to write instructions for a computer. |  |
| **Week 4** | Code.org Lesson 10  Loops in Ice Age  I will be able to construct a program using structures that repeat areas of code  I will be able to Improve existing codes by finding areas of repetition and moving them into looping structures | This **context-setting/skill-building** lesson will quickly introduce students to loops.  I will be able to implement a loop in Blockly code.  I will be able to add instructions to existing loops, gather repeated code into loops, and recognize patterns that need to be repeated. | If you have to tell someone to repeat the same action over and over again, how could you make the directions simpler?  How do loops help you program complex problems? | **Loop** - The action of doing something over and over again.  **Repeat** - To do something again. |  |
| **Week 5** | Code.org Lesson 11  Drawing Shapes with Loops  I will be able to differentiate between commands that need to be repeated in loops and commands that should be used on their own.  I will be able to Identify the benefits of using a loop structure instead of manual repetition. | This **skill-building** lesson builds on the understanding of loops from the previous lesson and doubles as a debugging exercise for extra problem-solving practice. | What is another shape or figure you could program using loops?  What is the code you used to create it? | **Loop** - The action of doing something over and over again.  **Repeat** - To do something again |  |
| **Week 6** | Code.org Lesson 12  Nested Loops in Maze  I will be able to break complex tasks into smaller repeatable sections.  I will be able to identify the benefits of using a loop structure instead of manual repetition.  I will be able to recognize large repeated patterns as made from smaller repeated patterns. | In this **skill-building** lesson, students will learn how to program a loop inside of another loop. | What do loops do?  How do we use loops?  Can you predict what kinds of things we would be using a loop inside of a loop for? | **Command** - An instruction for the computer. Many commands put together make up algorithms and computer programs.  **Loop** - The action of doing something over and over again.  **Repeat** - To do something again |  |

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|  | **Key Objective** | **Skills** | **Key Questioning** | **Key Vocabulary** | **Lesson context (Teacher notes)** |
| **Week 1** | Online Safety -  Safe searchers  (SoC 2.3)  We are responsible for our online actions  I will understand that we must take responsibility for our own actions regardless of what others are doing. | To be able to respond appropriately to given online situations | Who are my trusted adults?  What should I do if I feel bullied online? | Inappropriate behaviours  Online bullying  bystanders  trusted adult  Childline  CEOP |  |
| **Week 2**  **Starting on L3 (some may have completed, but most didn’t! )** | Course F  L3 Code.org  Making Sprites  I will be able to create an animation using sprites, and behaviors.  I will be able to create new sprites and assign them costumes and behaviors. | Students will write programs and learn about the two concepts at the heart of Sprite Lab: sprites and behaviors. | *If you wanted someone to create this scene for you on a computer, what instructions would they need?* | **Algorithm** - A list of steps to complete a task.  **Behaviour** - An action in Sprite Lab that a sprite performs continuously until it’s told to stop.  **Program** - An algorithm that has been coded into something that can be run by a machine.  **Sprite** - A graphic on the screen with a location, size, and appearance. |  |
| **Week3** | Course F  L4 Code.org  Spriets in action  I will be able to create an interactive animation using events.  I will be able to develop programs that respond to timed events.  I will be able to develop programs that respond to user input. | Students will write programs that respond to timed events and user input. | *What kinds of instructions caused people to make mistakes?*  *Why is it important to keep track of each behaviour separately?*  What happens if two behaviours seem to conflict with each other? | **Algorithm** - A list of steps to complete a task.  **Event** - An action that causes something to happen. |  |
| **Week 4** | Course F  L5 Code.org  Mini-Project: Virtual Pet  I will be able to create an interactive virtual pet using events, behaviors, and custom art.  I will be able to program solutions to problems that arise when designing a virtual pet, like feeding it. | Students will use Sprite Lab's "Costumes" tool to customize their pet's appearance. They will then use events, behaviors, and other concepts they have learned to bring their project to life. | Do you remember what an event is?  Do you remember what a behavior is?  Can you remember some of the behaviors you have used? What do they do? | **Behaviour** - An action in Sprite Lab that a sprite performs continuously until it’s told to stop.  **Event** - An action that causes something to happen. |  |
| **Week 5** | Course  L6 Code.org  Blank Space Stories  I will be able to assign a variable a value  Call a variable multiple times in a program.  Declare a variable  Determine the relationship between how a variable is defined, stored, and retrieved when we press “Run” on a program. | In this **context-setting** lesson, students will use fill-in-the-blank stories (similar to Mad Libs®) as a context for understanding how computers take and store input from a user, then use it later as a program runs. |  | **Variable** - A label for a piece of information used in a program. |  |
| **Week 6** | Course F  L7 Code.org  Texts and prompts  I will be able to use variables in conjunction with prompts.  I will be able to use variables to hold words and phrases. | In this **skill-building** lesson, students will get practice with variables in Sprite Lab.  At this point, students will simply be storing and retrieving values without changing them. | How did we use variables in our Blank Space Stories?  How do computer programs ask us for information? | **Prompt** - A message on the computer screen that waits for input from the user.  **Variable** - A label for a piece of information used in a program. |  |