Computing

Progression of knowledge, skills and understanding

Skills	Class 3	Class 4	Class 5
Online Safety and digital literacy	Understand that information can be stored and shared on the Internet Know different ways of reporting unacceptable content and contact online Understand when to share personal information and when not to Understand that people can give permission for others to use their content e.g. using Creative Commons Understand the benefits of a good password Recognise the benefits and risks of different apps and websites	Understand that we can search for information in a variety of ways and that we influence the outputs of searches depending on our input Understand that games and films have age ratings, and what that means Are aware that some people lie about who they are online Recognise what kind of websites are trustworthy sources of information Understand that the media can portray groups of people differently Understand what makes a strong password and why this is important at school and in the wider world	Know where to find copyright free images and audio, and why this is important Demonstrate responsible use of online services and technologies, and know a range of ways to report concerns Critically evaluate websites for reliability of information and authenticity Become increasingly savvy online consumers: know that algorithms are used to track online activities with a view to targeting advertising and information Know that there are laws around the purchase of games; the production, sending and storage of images; what is written online; and around online gambling
What is a computer?	Open and save a file to a suitable folder Use suitable file names when saving work Use a search engine to find information using keyword searches Understand that that school computers are connected together in a network Type using all fingers Understand you can organise files using folders Delete, move and copy files Use right-click, left-click and double-click appropriately on a mouse	Use the keyboard confidently to type at a suitable pace Use common keyboard shortcuts Create and use a strong password where appropriate Organise files effectively using folders Use more advanced searching techniques when using a search engine Understand that different devices can have different operating systems, and can give examples, e.g. Windows, iOS, Android Understand the main functions of an operating	Understand that search engines store information in databases Understand that the Internet is made up of computers from all around the world connected together Understand that we use a web browser to access information stored on the Internet Revise what is appropriate for the class if needed – Longer Online Safety and digital literacy unit

	Use a search engine to find specific information Know how to copy text and images into another document Remember an individual password	system Recognise common file types and extensions	
Communication: text, images and multimedia	Edit existing media to make new content with an awareness of copyright Evaluate existing and their own digital content Edit digital content to improve it according to feedback Design and create digital content for a specific purpose Use a range of tools to edit and enhance media for a particular effect	Collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365 Collect, organise and present information effectively using a range of media Understand the benefits of using technology to collaborate with others Are aware of a range of Internet services, e.g. email, VOIP (Voice Over Internet Protocol e.g. Skype, FaceTime), World Wide Web, and what they do	Identify and use appropriate hardware and software to fulfil a specific task Remix and edit a range of existing and their own media to create content Recognise the audience when designing and creating digital content Select, combine and use Internet services to fulfil a purpose Identify success criteria for creating digital content for a given purpose and audience Evaluate their own content against success criteria and make improvements accordingly
Programming and computer control From Discovery Coding – see coding pathways and lesson plans for further objectives and SC	LEVEL 3/4: **Lesson title – objective** **LEVEL 3:** 1. Sequence and animation: Stepping through space - To write a computer program where different pieces of code execute in a particular sequence. 2. Sequence and animation: Snail vs spider - To create a program that uses sequences for two different objects moving on the screen. 3. Sequence and animation: Alien space race - To write code that uses a timer to create a sequence of events.	LEVEL 4/5: **Lesson title – objective** **LEVEL 4:** 1. Introduction to variables: Healthy eating - To use a variable to keep track of the score in a game that uses conditional events. 2. Introduction to variables: Tablet till - to learn how to use multiple different variables and to set the value of a variables 3. Introduction to variables: Pirate Gold - To use a variable to keep track of the score in a game where the score increases, decreases or resets when different conditions are met.	LEVEL 5/6: **Lesson title – objective** **LEVEL 5:** 1. Random numbers and simulations: Caterpillar catcher - To write code for a game that uses random numbers to move objects in different directions. 2. Random numbers and simulations: Cross the road - To write code that uses random numbers to move objects at random speeds and headings, and use this to create a game.

4. Sequence and animation: Traffic light - To write code that uses a timer to create a sequence of traffic lights turning on and off.

5. Conditional events: Space maze – To use conditional events to control movement

6. Conditional events: Self-driving car - To use conditional hit events to control the movement of a car on the screen.

7. Conditional events: Hungry Snake - To make a simple game that uses conditional hit events to check if one object has hit another.

8. Conditional events: Pufferfish pop - To program a simple game where conditional events are used to check whether objects have collided.

LEVEL 4:

9. Introduction to variables: Pop game - To understand how a variable can be used to keep track of the score in a game.

10. Introduction to variables: Catch the coconuts - To use variables to keep track of the score in a game that uses conditional events.

11. Introduction to variables: Healthy eating - To use a variable to keep track of the score in a game that uses conditional events.

4. Repetition and loops – Bugs in the garden - To use a loop to do something repeatedly in a program.

5. Repetition and loops: Driving me loopy - To write code that uses nested loops to create a car-driving program.

6. Repetition and loops: Astronaut orbit - To write the code to program use the concepts of loops, regular or infinite repetition, and 'if statement' blocks.

7. Repetition and loops: Hot air balloon show - To use loops, a variable and if statements to create an animated scene performing a repeating pattern

LEVEL 5

8. Speed, direction and coordinates: Faster and slower - To set values in code to control the speed of an object.

9. Speed, direction and coordinates: Speedy simulation - To use object properties (speed, heading and angle) to create a driving simulation.

10. Speed, direction and coordinates: Sailing the seas - To create a game where an objects position on the screen is controlled by making changes to its co-ordinates.

11. Speed, direction and coordinates: Parachuting cows - To write code including if statements to make an object rotate, and combine this with conditional events to make a game.

12. Random numbers and simulations: Racing at random - To be able to generate and display random numbers, and use these within the program for a car-racing game.

3. Random numbers and simulations: Ping Pong - To create a game, using random headings in specific ranges.

4. Random numbers and simulations: Pinball - To use random numbers in combination with variables and conditional hit events to create a realistic game.

LEVEL 6

5. More complex variables: Shape-shifting - To write code that prompts the user to input the value of a variable, and use this to create an interactive block chart.

6. More complex variables: Pop challenge - To use my knowledge of variables to make a balloon pop game that gets harder as users score more points.

7. More complex variables: Toyshop till - To write the code for a shopping till using variables to store and calculate values.

8. More complex variables: Stopwatch - To create a stopwatch with stop, start, and reset buttons, and both digital and analogue displays.

9. Object properties: Don't feed the birds - To create a game where players stop objects moving by changing their properties.

10. Object properties: Rocket blaster – To write code that detects the properties of an object and passes the value of these properties (or a set of parameters) to other objects, and to use this to create a space game.

11. Object properties: Football fun - to make a football game that passes the speed and

| | | | heading of the pointer's movement to a ball on the screen.
12. Object properties: Sheepdog - To make a game that moves objects around by getting information from events and passing object properties. To learn how to pass properties from one object to a second in order to make the second object move relative to the first.
13. Object properties: Golf game - To create a golf game by writing code that accesses and uses object properties, including passing the value of these properties to other objects (passing a set of parameters). |
| | **For chn who grasp this quickly, please use Scratch or code.org to extend skills.** | | |