# Computing

## Progression of knowledge, skills and understanding

| Skills | Class 3 | Class 4 | Class 5 |
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| Online Safety and digital literacy | Understand that information can be stored and shared on the Internet<br>Know different ways of reporting unacceptable content and contact online<br>Understand when to share personal information and when not to<br>Understand that people can give permission for others to use their content e.g. using Creative Commons<br>Understand the benefits of a good password<br>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<br>Understand that games and films have age ratings, and what that means<br>Are aware that some people lie about who they are online<br>Recognise what kind of websites are trustworthy sources of information<br>Understand that the media can portray groups of people differently<br>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<br>Demonstrate responsible use of online services and technologies, and know a range of ways to report concerns<br>Critically evaluate websites for reliability of information and authenticity<br>Become increasingly savvy online consumers: know that algorithms are used to track online activities with a view to targeting advertising and information<br>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 |
| **VOCAB:** | Digital footprint, permission, unacceptable content, report | Output, gaming, trustworthy, media, secure password, wider world | Communication, copyright, authenticity, reliability, algorithms |
| What is a computer? | Open and save a file to a suitable folder<br>Use suitable file names when saving work<br>Use a search engine to find information using keyword searches<br>Understand that that school computers are connected together in a network<br>Type using all fingers<br>Understand you can organise files using folders | Use the keyboard confidently to type at a suitable pace<br>Use common keyboard shortcuts<br>Create and use a strong password where appropriate<br>Organise files effectively using folders<br>Use more advanced searching techniques when using a search engine | Understand that search engines store information in databases<br>Understand that the Internet is made up of computers from all around the world connected together<br>Understand that we use a web browser to access information stored on the Internet |

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|  | Delete, move and copy files<br>Use right-click, left-click and double-click appropriately on a mouse<br>Use a search engine to find specific information<br>Know how to copy text and images into another document<br>Remember an individual password | Understand that different devices can have different operating systems, and can give examples, e.g. Windows, iOS, Android<br>Understand the main functions of an operating system<br>Recognise common file types and extensions | | Revise what is appropriate for the class if needed – Longer Online Safety and digital literacy unit |
| **VOCAB:** | File/folder, search engine, school network, copy, paste, modify | Device, operating system, extension, organise/order, refine | | Webpage, connecting devices, research strategies, browser, HTML code storing, database |
| Communication: text, images and multimedia | Edit existing media to make new content with an awareness of copyright<br>Evaluate existing and their own digital content<br>Edit digital content to improve it according to feedback<br>Design and create digital content for a specific purpose<br>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<br>Collect, organise and present information effectively using a range of media<br>Understand the benefits of using technology to collaborate with others<br>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<br>Remix and edit a range of existing and their own media to create content<br>Recognise the audience when designing and creating digital content<br>Select, combine and use Internet services to fulfil a purpose<br>Identify success criteria for creating digital content for a given purpose and audience<br>Evaluate their own content against success criteria and make improvements accordingly |
| **VOCAB:** | Copyright, digital content, evaluate, purpose, edit, enhance, effect | Collaborate, media, email, world wide web, blog | | Hardware, software, audience, media, research strategies |
| Programming and computer control | YEAR 3<br>**Lesson title – objective**<br>**LEVEL 3:**<br>1. Sequence and animation: Stepping through space - To write a | YEAR 4<br>**Lesson title – objective**<br>**LEVEL 4:**<br>1. Introduction to variables: Pop game - To understand how a | YEAR 5<br>**Lesson title – objective**<br>**LEVEL 5**<br>1. Speed, direction and coordinates: Faster and slower - | YEAR 6<br>**Lesson title – objective**<br>**LEVEL 6**<br>1. More complex variables: Shape-shifting - To write code that |

| From Discovery Coding – see coding pathways and lesson plans for further objectives and SC | computer program where different pieces of code execute in a particular sequence.<br>2. Sequence and animation: Snail vs spider - To create a program that uses sequences for two different objects moving on the screen.<br>3. Sequence and animation: Alien space race - To write code that uses a timer to create a sequence of events.<br>4. Sequence and animation: Traffic light - To write code that uses a timer to create a sequence of traffic lights turning on and off.<br>5. Conditional events: Space maze – To use conditional events to control movement<br>6. Conditional events: Self-driving car - To use conditional hit events to control the movement of a car on the screen.<br>7. Conditional events: Hungry Snake - To make a simple game that uses conditional hit events to check if one object has hit another.<br>8. Conditional events: Pufferfish pop - To program a simple game where conditional events are used to check whether objects have collided. | variable can be used to keep track of the score in a game.<br>2. Introduction to variables: Healthy eating - To use a variable to keep track of the score in a game that uses conditional events.<br>3. Introduction to variables: Tablet till - to learn how to use multiple different variables and to set the value of a variables<br>4. 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.<br>5. Repetition and loops – Bugs in the garden - To use a loop to do something repeatedly in a program.<br>6. Repetition and loops: Driving me loopy - To write code that uses nested loops to create a car-driving program.<br>7. Repetition and loops: Astronaut orbit - To write the code to program use the concepts of loops, regular or infinite repetition, and 'if statement' blocks. | To set values in code to control the speed of an object.<br>2. Speed, direction and coordinates: Speedy simulation - To use object properties (speed, heading and angle) to create a driving simulation.<br>3. 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.<br>4. 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.<br>5. 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.<br>6. Random numbers and simulations: Caterpillar catcher - To write code for a game that uses random numbers to move objects in different directions.<br>7. Random numbers and simulations: Cross the road - To write code that uses random | prompts the user to input the value of a variable, and use this to create an interactive block chart.<br>2. 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.<br>3. More complex variables: Toyshop till - To write the code for a shopping till using variables to store and calculate values.<br>4. More complex variables: Stopwatch - To create a stopwatch with stop, start, and reset buttons, and both digital and analogue displays.<br>5. Object properties: Don't feed the birds - To create a game where players stop objects moving by changing their properties.<br>6. 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, |

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| | | 8. Repetition and loops: Hot air balloon show - To use loops, a variable and if statements to create an animated scene performing a repeating pattern | numbers to move objects at random speeds and headings, and use this to create a game.<br>8. Random numbers and simulations: Ping Pong - To create a game, using random headings in specific ranges.<br>9. Random numbers and simulations: Pinball - To use random numbers in combination with variables and conditional hit events to create a realistic game | and to use this to create a space game.<br>7. 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.<br>8. 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.<br>9. 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). |
| **VOCAB:** | Timer event, Step, Command, Wait command, Hit event, Object, Value, Sequence, Command, Timer, Selection Condition<br><br>Variable, Set command, Change command, Hit event, Click event, Variable, Change, Set, Value, Score, Condition | Variable, Set command, Change command, Hit event, Click event, Variable, Change, Set, Value, Score, Condition, Repeat loop, Always loop, Timer loop, If statement, Variable, Loop, Nesting, Infinite, Repeat, Condition, Algorithm<br><br>Set command, Change command, Value, Property Value, Parameter, Coordinate, Axis, Heading, Angle, Speed, Random operator, Set command, | Set command, Change command, Value, Property Value, Parameter, Coordinate, Axis, Heading, Angle, Speed, Random operator, Set command, Change command, Value, Random, Range, Heading, Coordinate, Simulation, Property, Algorithm<br>Comparison operator, Variable, Value, If statement, Input, Variable, Boolean, True, False, Operator<br>Get command, Set command, Value, Variable, Parameter, Property, Simulation, Heading, Friction |

| | | Change command, Value, Random, Range, Heading, Coordinate, Simulation, Property | |