# Computing

Overview

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| Online Safety Unit: | What is Cyberbullying? | To Buy or Not to Buy | Keep it to Yourself | Emailing | Online Communication | Party Planners |
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| Year 4 | Computing Systems & Networks – The Internet | Creating Media – Audio Production | Programming A – Repetition in Shapes | Data & Information – Data Logging | Creating Media – Photo Editing | Programming B – Repetition in Games |
| Online Safety Unit: | Cyberbullying | Super Searches | Copycats! | To Much Information? | The Online Community | Cyber Superheroes |
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| Year 5 | Computing Systems & Networks – Systems & Searching | Creating Media – Video Production | Programming A – Selection in Physical Computing | Data & Information – Flat Files Databases | Creating Media – Introduction to Vector Graphics | Programming B – Selection in Quizzes |

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| **Online Safety Unit:** | **Spam!** | **Sites to Cite** | **Powerful Passwords** | **False Photography** | **Online Safety Story Planning** | **Online Safety Comics** |
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| **Year 6** | **Computing Systems & Networks – Communication & Collaboration** | **Creating Media – Web Page Creation** | **Programming A – Variables in Games** | **Data & Information – Introduction to Spreadsheets** | **Creating Media – 3D Modelling** | **Programming B – Sensing Movement** |
| **Online Safety Unit:** | **Cyberbullying** | **Secure Websites** | **People Online** | **Girls & Boys Online** | **SMARTbots** | **Online Safety: Let's Get Quizzical!** |

| | Autumn 1 | Autumn 2 |
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| Year 3 | **Unit 1: Desktop Publishing**<br><br>Learners will become familiar with the term's 'text' and 'images' and emojis and understand that they can be used to communicate messages offline and online. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.<br><br>Desktop Publishing<br>• To know the difference between texts and images and that they can communicate images.<br>• To know how to change font style, size and colour for a given purposed and understand that text can be change to communicate more clearly.<br>• To understand what page orientation is and create a template for a purposed.<br>• To paste text and image to create a magazine cover.<br>• To be able to consider different layouts and match them to a purpose.<br>• To understand why desktop publishing is useful. | **Unit 2: Computing Systems and Networks**<br><br>Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network.<br><br>Computing Systems & Networks<br>• To know that digital devices accept inputs and produce outputs.<br>• To classify, describe and design a digit device<br>• To explain how messages are passed through multiple connections and discuss why we need a network device.<br>• To recognise that a computer is made up of a number of devices and to know the role of a switch, server and wireless access point in a network.<br>• To be able to recognise network devices around me and the benefits of computer networks. |

| Year 3<br><br>Online Safety | **Unit 1: Online Safety - What is Cyberbullying?**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of recognising cyberbullying.**<br><br>**What is Cyberbullying?**<br><br>• **To know what cyberbullying is and how to address it.** | **Unit 2: Online Safety – To Buy or Not to Buy?**<br><br>**Learners will be able to 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.**<br>**Learners will be able to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of identifying advertisements online.**<br><br>**To Buy or Not to Buy?**<br><br>• **To understand how websites use advertisements to promote products.** |
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| Year 4 | Unit 1: Computing Systems & Networks – The Internet | Unit 2: Creating Media – Audio Production |
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| | **In this unit, learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.** | **In this unit, learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.** |
| | **Computing Systems & Networks – The Internet**<br>• **To describe the internet as a network of networks and demonstrate how information is shared and why it needs protecting.**<br>• **To describe how network devices connect and recognise that the World Wide Web contains websites and webpages.**<br>• **To describe the types of media that can be shared and where websites are stored.**<br>• **To explain and recognise where media can be found on websites.**<br>• **To know that websites are created by people and suggest who owns the content on websites.**<br>• **To explain that there are rules to protect content**<br>• **To evaluate the consequences of unreliable content, knowing that some information is not honest, accurate or legal.** | **Creating Media – Audio Production**<br>• **To identify the input and output devices used to record and play sound and explain that the person who records the sound can say who is allowed to use it.**<br>• **To re-record my voice to improve my recording as well as inspect the soundwave video to know where to trim my recordings.**<br>• **To explain how sound can be combined to make a podcast more engaging.**<br>• **To be able to open my project, arrange multiple sounds and explain the different between saving a project and exporting an audio file.**<br>• **To be able to evaluate an audio recording, suggesting its strengths and how it can be improved.** |

| Year 4<br><br>Online Safety | **Unit 1: Online Safety – Cyberbullying**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of thinking about how online messages can be hurtful.**<br><br>**Cyberbullying**<br><br>• **I can identify how a message can hurt someone's feelings.**<br>• **I can say how I should respond to a hurtful message online.** | **Unit 2: Online Safety – Super Searchers**<br><br>**Learners will be able to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of using search engines accurately.**<br><br>**Super Searchers**<br><br>• **I can use a search engine accurately.** |
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| Year 5 | Unit 1: Computing Systems & Networks – Systems & Searching | Unit 2: Creating Media – Video Production |
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| | **In this unit, learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners will consider how to keep their personal information safe online and what makes a trusted website. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines.**<br><br>**Computing Systems & Networks – Systems & Searching**<br>• **To explain that systems are built using a number of parts including the input, process and output of a digital system.**<br>• **To identify tasks that are managed by computer systems and the human elements of a computing system.**<br>• **To make use of a web search to find information and refining my search to compare results from different engines.**<br>• **To explain why we need tools to find things online and related a search to the engines index.**<br>• **To order search results by a rank and knowing that a search engine also follows rules to rank a result.** | **In this unit, learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. Learners will also learn about what actions to take if they see any inappropriate content online. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.**<br><br>**Creating Media – Video Production**<br>• **To identify and compare the features of videos.**<br>• **To identify the find features on a digital recording device.**<br>• **To experiment with different angles and use a microphone.**<br>• **To suggest filming techniques for a given purpose and capturing video using a range of film techniques.**<br>• **To create, outline and save video content.**<br>• **To be able to store, retrieve and export my video.**<br>• **To recognise and evaluate my video and share my opinions.** |

| Year 5 Online Safety | **Unit 1: Online Safety – Spam!**<br><br>**Learner will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying and avoiding spam emails.**<br><br>**Spam!**<br><br>• **To identify spam emails and what to do with them.** | **Unit 2: Online Safety – Sites to Cite**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of citing the work of others.**<br><br>**Sites to Cite**<br><br>• **To write citations for the websites I use for research.** |
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| Year 6 | **Unit 1: Computing Systems & Networks – Communication & Collaboration** | **Unit 2: Creating Media – Web Page Creation** |
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| | **In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet and how to report concerns about inappropriate content online.**<br><br>**Computing Systems & Networks – Communication & Collaboration**<br>• **To recognise that internet devices have addresses.**<br>• **To identify and explain the main parts of a date packet and that all data is transferred over the internet in packets.**<br>• **To recognise how to access shared files stored online.**<br>• **To identify different ways of working together online and knowing that it can be private or public.**<br>• **To explain how the internet enables effective collaboration.**<br>• **To explain the different ways people, communicate and identifying that there are a variety of ways and methods.**<br>• **To decide what should and should not be online and how we report inappropriate content online.** | **In this unit, learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright, fair use of media and creative commons, the aesthetics of the site, and navigation paths. This will enable the learners to understand how to be a respectful and responsible user of technology online.**<br><br>**Creating Media – Web Page Creation**<br>• **To explore a website and discuss the different types of media on websites.**<br>• **To recognise the common features of a webpage and suggest media to include on my own page.**<br>• **To understand copyright and to be able to find my own copyright free images.**<br>• **To know what 'fair use' means.**<br>• **To add my own content to a web page, preview and evaluate this on different devices.**<br>• **To explain what a navigation path is and why they are useful.**<br>• **To create my own hyperlinks and evaluate the user experience of a website.** |

| Year 6 Online Safety | **Unit 1: Online Safety – Cyberbullying**<br><br>**Learners will u se technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of comparing cyberbullying to bullying in person and developing strategies for dealing with online bullying.**<br><br>**Cyberbullying**<br><br>• **I can find similarities and differences between in-person and cyberbullying.**<br><br>• **I can identify good strategies to deal with cyberbullying.** | **Unit 2: Online Safety – Secure Websites**<br><br>**Leaners will use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying secure and unsecure websites.**<br><br>**Secure Websites**<br><br>• **I can identify secure websites by identifying privacy seals of approval.** |
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| **Year 3** | **Unit 3: Stop Frame Animation**<br><br>**In this unit, learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.**<br><br>**Stop Frame Animation**<br>• **To draw a sequence of pictures and create an effective flip book-style animation.**<br>• **To predict and explain what an animation will look like and what little changes are needed for each frame.**<br>• **To break a story down into settings, characters and events and create a storyboard.**<br>• **To use onion skinning to help me, reviewing a sequence of frames to check my work.**<br>• **To explain ways to make my animation better and make improvements based on feedback.**<br>• **To add other media to my animation and explain why other media is needed.** | **Unit 4: Sequencing Sounds**<br><br>**This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.**<br><br>**Sequencing Sounds**<br>• **To be able to identify objects in Scratch like spirits and backdrops.**<br>• **To recognise that Scratch are represented as blocks.**<br>• **To start a program in different ways and create a sequence of commands.**<br>• **To explain what a sequence is and combine sound commands.**<br>• **To build a sequence of commands.**<br>• **To decide actions for each sprite in a program.**<br>• **To identify and name the objects I will need for a project and implement my algorithm as a code.** |

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| **Year 3**<br><br>• **Online Safety** | **Unit 3: Online Safety - Keep It to Yourself!**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating passwords and using privacy settings.**<br><br>**Keep it to Yourself**<br><br>• **To create strong passwords and understand privacy settings.** | **<u>Unit 4: Online Safety -</u> Emailing**<br><br>**Learners will be able to 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.**<br>**To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of sending and receiving emails safely.**<br>**Learners will be able to safely send and receive emails.**<br><br>**Emailing**<br><br>• **To be able to safely send and receive emails.** |

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| **Year 4** | **<u>Unit 3: Programming A – Repetition in Shapes</u>**<br><br>**Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.**<br><br>**Programming A – Repetition in Shapes**<br><br>• **To identify that accuracy in programming is important.**<br>• **To create a program in a text-based language by using a template to draw, write and test an algorithm.**<br>• **To identify repetition and sequences in tasks and patterns.**<br>• **To modify a count-controlled loop to product an outcome.**<br>• **To identify chunks of action in the real world and explain that a computer can repeatedly call a procedure.**<br>• **To design a program that includes count-controlled loops and debug it.** | **<u>Unit 4: Data & Information – Data Logging</u>**<br><br>**In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.**<br><br>**Data & Information – Data Logging**<br><br>• **To explain that data gathered over time can be used to answer questions.**<br>• **To use a digit device to collect data, explaining that data can be collected and identified using sensors.**<br>• **To explain that a data logger collects 'data points' from sensors over time**<br>• **To recognise how a computer can help use analyse, view and plan data** |

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| **Year 4 Online Safety** | **<u>Unit 3: Online Safety – Copycats!</u>**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of finding out about online plagiarism.**<br><br>**Copycats!**<br><br>• **I understand the term 'plagiarism' and how to avoid it.** | **<u>Unit 4: Online Safety – To Much Information?</u>**<br><br>**Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating their own sample online game account, highlighting information which is acceptable to include.**<br><br>**To Much Information?**<br><br>• **To create a safe online profile.** |

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| **Year 5** | **Unit 3: Programming A – Selection in Physical Computing**<br><br>**In this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be used to control the operation of the model. Throughout this unit, learners will apply the stages of programming design.**<br><br>**Programming A – Selection in Physical Computing**<br><br>• **To control a simple circuit connected to a computer and program a microcontroller to make an LED switch.**<br>• **To write a program that includes controlled loops by designing sequences and connecting more than one output component.** | **Unit 4: Data & Information – Flat Files Databases**<br><br>**This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.**<br><br>**Data & Information – Flat Files Databases**<br><br>• **To use a form to record information and ordering, sorting and grouping data cards.**<br>• **To compare paper and computer-based databases.**<br>• **To outline how you can answer questions by grouping and then sorting data by answering specific questions.**<br>• **To explain that tools can be used to select data by outlining how 'AND' and 'OR' to refine data selection.**<br>• **To explain that computer program can be used to compare data visually by selecting an appropriate chart.**<br>• **To use real-world databases to answer questions and present my findings to a group.** |

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| | • To explain that a loop can stop when a condition is met.<br>• To explain that a loop can be used to repeatedly check whether a condition has been met by using selection ( 'if..then..')<br>• To create a program that controls a physical selection by using algorithms and a selection to produce an intended outcome.<br>• To create a program that controls a physical computing project. | |
| **Year 5 Online Safety** | **Unit 3: Online Safety – Powerful Passwords**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of following rules to help create strong passwords.**<br><br>**Powerful Passwords**<br><br>• To create strong passwords. | **Unit 4: Online Safety – False Photography**<br><br>**Learners will be able to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of finding out how photos can be altered and presented as reality online.**<br><br>**False Photography**<br><br>• To recognise when, why and how photographs we see online may have been edited. |

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| **Year 6** | **Unit 3: Programming A – Variables in Games**<br><br>**This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard.**<br><br>**Programming A – Variables in Games**<br><br>• **To define a 'variable' as something that is changeable.**<br>• **To explain why a variable is used in a program and identify a program variables as a placeholder in memory for a single value.**<br>• **To choose how to improve a game by using variables, deciding where in a program to change a variable and the value of it.**<br>• **To design a project that builds on a given example by choosing the artwork for a project, creating algorithms and explaining my design choices.**<br>• **To use my design to create a project.**<br>• **To evaluate my project by identifying how it can be improved and sharing it with others.** | **Unit 4: Data & Information – Introduction to Spreadsheets**<br><br>**This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.**<br><br>**Data & Information – Introduction to Spreadsheets**<br><br>• **To create a data set in a spreadsheet by collecting, suggesting and entering data.**<br>• **To build a data set in a spreadsheet by explaining what an item of data is, choosing an appropriate format for a cell and applying it.**<br>• **To explain that formulas can be used to product calculated data.**<br>• **To apply formulas to data that include a range of cells.**<br>• **To create a spreadsheet to plan an event and answer questions with data being organised.**<br>• **To choose a suitable way to present data by producing a chat which shows answers to questions.** |

| Year 6 Online Safety | Unit 4: Online Safety – People Online | Unit 5: Online Safety – Girls & Boys Online |
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| | **Learners will use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying information that is safe and unsafe to share with online friends.**<br><br>**People Online**<br><br>• **I understand the benefits and pitfalls of online relationships.**<br><br>• **I can identify information that I should never share.** | **Use technology safely, respectfully and responsibly.**<br>**Be discerning in evaluating digital content.**<br>**Children will work in the context of evaluating media aimed at boys and girls.**<br><br>**Girls & Boys Online**<br><br>• **I can identify how the media play a powerful role in shaping ideas about girls and boys.** |

| | Summer 1 | Summer 2 |
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| **Year 3** | **Unit 5: Branching Databases**<br><br>**In this unit, learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases.**<br><br>**Branching Databases**<br><br>• **To create questions with yes or no answers to separate attributes and objects.**<br>• **To identify the attributes needed to collect data about an object and arrange objects into a tree structure.**<br>• **To create a branching database using yes/no questions and testing the database to see if it works.**<br>• **To explain why it is helpful for a database to be structured and compare structures.**<br>• **To plan the structure of a branching database.**<br>• **To independently create an identification tool and get my partner to test it out.** | **Unit 6: Events & Actions in Programs**<br><br>**This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of Pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze-tracing program.**<br><br>**Events & Actions in Programs**<br><br>• **To explain how a sprite moves in an existing project and the relationship between an event and an action.**<br>• **To create a program to move a sprite in four directions, considering size and character.**<br>• **To adapt a program to a new content considering the real world when making design choices.**<br>• **To develop my program by adding features, using suitable keys and building more sequences of command to make a design work.**<br>• **To identify and fix bugs in a program by testing a program against a given design and matching code to an outcome.**<br>• **To design and create a maze-base challenge and evaluate my final project.** |

| Year 3 Online Safety | Unit 5: Online Safety – Online Communication | Unit 6: Online Safety – Party Planners |
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| | **Learners will be able to 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.**<br>**They will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of exploring the different ways we communicate online.**<br><br>**Online Communication**<br><br>• **To explore different ways children can communicate online.** | **Learners will 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 in the context of planning a party online.**<br><br>**Party Planners**<br><br>• **To use knowledge about online safety to plan a party online.** |

| Year 4 | Unit 5: Creating Media – Photo Editing | Unit 6: Programming B – Repetition in Games |
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| | **In this unit, learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the ethics and impact that editing images can have, and evaluate the effectiveness of their choices.**<br><br>**Creating Media – Photo Editing**<br>• **To explain that composition of digital images can be changed, by improving an image by rotating it and cropping it.**<br>• **To explain that colours can be changed in a digital image and experimenting with this.**<br>• **To explain that image can be combined and experimenting with tools to select and copy part of an image.**<br>• **To combine image for a purpose and pick suitable images for projects.**<br>• **To evaluate how changes can improve an image by reviewing using a criteria and using feedback to make changes.** | **In this unit, learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.**<br><br>**Programming B – Repetition in Games**<br>• **To develop the use of count-controlled loops in a different programming environment by listing everyday tasks as a set of instructions.**<br>• **To explain that in programming there are infinite loops and count-controlled loops and modifying these loops to produce a given outcome.**<br>• **To develop a design that includes two or more loops which run at the same time.**<br>• **To modify an infinite loop in a given program**<br>• **To design a project that includes repetition by building and refining an algorithm.** |

| Year 4<br><br>Online Safety | **Unit 5: Online Safety – The Online Community**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of giving examples of how to be a good digital citizen.**<br><br>**The Online Community**<br><br>• **To explain how to be a responsible digital citizen.** | **Unit 6: Online Safety – Cyber Superheroes**<br><br>**Learners will be able to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating an online safety character.**<br><br>**Cyber Superheroes**<br><br>• **To create an online safety superhero character.** |
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| Year 5 | Unit 5: Creating Media – Introduction to Vector Graphics | Unit 6: Programming B – Selection in Quizzes |
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| | **In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.**<br><br>**Creating Media – Introduction to Vector Graphics**<br>• **To identify that drawing tools can be used to produce different outcomes and vector drawing are made using shapes.**<br>• **To create a vector drawing by combining shapes and moving, resizing and rotating objects.**<br>• **To use tools to achieve a desired effect such as the zoom tool and resize handles.**<br>• **To recognise that vector drawings consist of layers.**<br>• **To group objects to make them easier to work with and duplicating objects and grouping them.**<br>• **To apply what I have learned about vector drawings to compare vector drawings to freehand paint drawings.** | **In this unit, learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if… then… else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.**<br><br>**Programming B – Selection in Quizzes**<br>• **To explain how selection is used in computer programs by recalling, identifying and modifying conditions in a program.**<br>• **To relate that a conditional statement connects a condition to an outcome**<br>• **To explain how selection directs the flow of a program by designing the follow of a program that contains 'if…then…else'.**<br>• **To design a program that uses selection**<br>• **To create a program that uses selection by implementing an algorithm to create the first selection of a program.**<br>• **To evaluate my program by looking at how the program can be improved, identifying the setup code needed and extending my program further.** |

| Year 6 | Unit 5: Creating Media – 3D Modelling | Unit 6: Programming B – Sensing Movement |
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| | **Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.**<br><br>**Creating Media – 3D Modelling**<br>• **To recognise that you can work in three dimensions on a computer by adding 3D shapes to a project and viewing different perspectives.**<br>• **To identify that digital 3D objects can be modified and resize, lift, lower and recolour a 3D objects.**<br>• **To recognise that objects can be combined in a 3D model and accurately sized.**<br>• **To create a 3D model for a given purpose**<br>• **To plan my own 3D model where objects have been combined.**<br>• **To create my own digital 3D model that is constructed, explained and modified using a design.** | **This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.**<br><br>**Programming B – Sensing Movement**<br>• **To create a program to run on a controllable device using my knowledge of programming.**<br>• **To explain that selection can control the flow of a program by identifying examples of conditions in the real and using the variables in an if, then, else statement to select the flow of a program.**<br>• **To update a variable with a user input by using conditions to change a variable.**<br>• **To use a conditional statement to compare a variable to a value.**<br>• **To design a project that uses inputs and outputs on a controllable device.**<br>• **To develop a program to use inputs and outputs on a controllable device.** |

| Year 6 Online Safety | **Unit 5: Online Safety – SMARTbots**<br><br>**Learners will use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying how to behave in a range of online scenarios.**<br><br>**SMARTbots**<br><br>• **I can apply my online safety knowledge to my online activities.** | **Unit 6: Online Safety – Lets Get Quizzical!**<br><br>**Learners will use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating an online safety quiz.**<br><br>**Lets Get Quizzical!**<br><br>• **I can use my knowledge of online safety to create a multiple choice quiz.** |
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