Computing Curriculum
Year 5 and 6 – Cycle A

Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

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.

Intent

At Caythorpe, we use Teach Computing, provided by the NCCE, as the basis of our sequence of learning.

All learning outcomes can be described through a high-level taxonomy of ten strands, ordered alphabetically as follows:

- Algorithms — Be able to comprehend, design, create, and evaluate algorithms
- Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
- Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
- Creating media — Select and create a range of media including text, images, sounds, and video
- Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
- Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
- Effective use of tools — Use software tools to support computing work
- Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
- Programming — Create software to allow computers to solve problems
- Safety and security — Understand risks when using technology, and how to protect individuals and systems

The taxonomy provides categories and an organised view of content to encapsulate the discipline of computing. Whilst all strands are present at all phases, they are not always taught explicitly.

Due to our mixed year groups, we have adapted the structure of the Teach Computing scheme. The 'Computing Systems and Networks' unit is combined for Year 1/2, Year 3/4, and Year 5/6. This is then repeated in each cycle; it is expected that children will be completely secure in their knowledge by the end of each phase. This approach allows all children in the class to learn the key knowledge which underpins all the other units. Some of the units have been reordered to ensure that prior knowledge that the children need is taught before moving onto more complex learning. Our use of flashbacks allows children to revisit knowledge regularly so that they can remember key knowledge more effectively and do not forget.

Our pedagogical approach allows children to work collaboratively towards a project-based goal. The sequence of learning is taught through key concepts and vocabulary. In the first instance, children are encouraged to unplug from technology and explore ideas in other familiar real-life contexts before applying this to the new technological context. Children are continually encouraged to work with physical computing to enhance learning. As well as this, they apply knowledge from the arts alongside computing to achieve a goal. In programming our sequence allows children to explore, read and comprehend block based and text base code; leading them to successfully being able to write code.

EYFS

There are no statutory requirements to use and learn about technology in EYFS. However, at Caythorpe we believe technology can play a role in supporting early communication, language and literacy. It can offer new learning opportunities through ebooks, digital cameras, programmable toys, apps, computers with appropriate software, iPads and video calling. Thus, by the end of the year the pupils at Caythorpe have a range of technologies available to them within the nursery's continuous provision which they can choose to use whenever they wish to for their own purposes. Whilst children are developing their understanding of these technologies, practitioners should be drawing their attention to the technology that's being used in the world around them, from mobile phones to pedestrian crossings. Practitioners should also provide a positive role model by showing children that adults use technology for their own purposes and by talking to the children about the value they place on this use. In this way children will see technology used for real purposes and will develop the understanding that technologies are tools to be used when they're needed and that they're not used just for the sake of it. They will develop a positive disposition towards technology and a motivation to use it both now and in the future.

Vocabulary: By the end of EYFS they will be able to *use the words…*		Outcomes for the end of EYFS: *Children will be able to:*
Tablet Phone Computer Keyboard Keys Touch screen Code/ coding A range of vocabulary linked to appliances such as tills, calculators, etc. Switch Safe Safety Online Internet Danger	Kind Respect Permission Personal information Swipe Technology App games	▪ Children will use and access a range of technology equipment in the learning environment. ▪ For pieces of equipment that the children are expected to use with regularity such as CD player or tablet, children need to be taught how to turn it on and use it as it is intended. ▪ Children will know how to take care of electronic equipment – away from water, not left on the floor et. ▪ Children will know that technology is used throughout the whole of our world and should discuss in class time instances of use such as tills, medical equipment, computers. ▪ Children will be able to verbalise and remember technology that is in their homes and familiar environments. ▪ Role play planning needs to enable pupils to use technology in play activities and observations should assess where they use them and the language and skills they reflect during their self-initiated activities -consider the 'Domestic Role-play' area to have an office, telephone, iPad. ▪ Children will know specific uses for computers. ▪ Children will know how to swipe on a screen and access an app that they a) self -elect b) are directed to select. ▪ Children will know how to access and use independently a range of appropriate apps that support learning in the class. ▪ Children will know that there are some very positive uses of computers however sometimes there are scary things that happen when you are on games or on the internet. ▪ Children will know that you are responsible for being kind to each other when online. ▪ Children will have watched an adult modelling the use of Scratch to do simple coding exercise. ▪ Children will have had experience of directing each other to create a sequence of instructions. ▪ Adults will have taught children to undertake a simple coding procedure on Scratch to do a simple action. ▪ Children need to learn a simple coding sequence and to explain how they completed it

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. Schools are not required by law to teach the example content in [square brackets].

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.

	Autumn		Spring		Summer	
Topic	**Computer Systems and networks – Systems, searching, communication and collaboration**	**Creating media – Video Production**	**Programming A – Selection in physical computing**	**Data and information – Flat File databases**	**Programming A – Variables in games**	**Data and information - Spreadsheets**

Progression	This combines the year 5 and year 6 units for 'computer systems and networks' from Teach Computing and the same pieces of procedural and declarative knowledge are taught in both cycles due to the importance of the knowledge: underpinning the rest of the computing curriculum. It is expected that by the end of year 6 all children will know and remember the key knowledge outlined.	This unit progresses learners' knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. By the end of the unit, learners will have developed the skills required to plan, record, edit, and finalise a video.	This unit assumes that learners will have prior experience of programming using block-based construction (eg Scratch) and understand the concepts of sequence and repetition.	This unit progresses pupils' knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the pupils create a presentation showing understanding and application of all the tools used within the unit.	This unit assumes that pupils will have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch.	This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets.
Resources	Laptops, access to internet, iPads, search engines	Laptops, internet access, iPads	Laptops, internet access, iPads, lesson slides, redfernelectronics.co.uk/crumble-software. The unit has been designed to make use of the components provided in the Crumble starter kit, which are as follows: 1 Crumble controller, 12 crocodile leads, 2 Sparkles (A Sparkle is an RGB LED — red, green, blue light-emitting diode. The D connector allows the Crumble to use an electronic signal to control the Sparkle. The signal sets the colour and brightness of the LED.) 1 push switch suitable for Crumble, 1 light sensor suitable for Crumble, 1 buzzer suitable for Crumble, 1 micro USB cable, 1 switched battery box suitable for Crumble, Motors,	Laptops, internet access, iPads, lesson slides, Support with navigating the databases can be found at http://www.j2e.com/help/videos/datags4.	Laptops, access to internet, iPads, Scratch,	Laptops, access to internet, iPads, excel,
Vocabulary	Search engine, world wide web, select, rank, address bar, web crawlers, Input, output, processes,	Storyboard, volume, camera lens, zoom, pan, angle, theme, setting, characters, colour, sound, and dialogue. store, retrieve, and export	microcontroller (Crumble controller) output devices — LEDs and motors, input device – push switch, algorithms, count controlled loop,	Database, record, field, sorting, grouping, AND, OR, filter,	Use-Modify-Create model, variables, blocks, algorithm, sprites, input, output,	cells, formulae, data, column, row, organise, analyse, operations: multiplication, subtraction, division, and addition,

Flashback	Computers are made up of input devices, digital devices and output devices. A computer network is made of multiple devices that pass information between each other. Information can be shared through mobile networks, wifi (via wireless access points), a network switch and wired connections.	*Y6 additional flashback* How to draw, modify and reposition objects. How to move objects between layers of the drawing.	Search engines can give higher priority to certain websites that pay them (advertising) this is how they make their money and can be a drawback of the sites Data is transferred in packets over networks in which each device has a unique address (IP address) We can access shared information online and we can use this to collaborate and communicate	*Y6 additional flashback* How to combine objects to achieve a desired effect. Websites are created using HTML code.	How to sequence the movement of multiple sprites at once. How to create a sequence of commands to produce a given outcome How to use extension block within Scratch.	*Y6 additional flashback* A navigation path is a link to another webpage within a website. How to create and build a multipage website with clear navigation paths and hyperlinks.	That a branching database is an identification tool. How to relate two levels of a branching database using 'AND' Real world applications of a branching database.	*Y6 additional flashback* How to select, modify and rotate 3d objects using a CAD tool.	How to set up physical computing circuits to control multiple outputs using a programming tool (motors, lights and buzzers) if and then selections can be used to control the direction of a programme. That programmes are written using algorithms and we need to test and debug them to make improvements.	*Y6 additional flashback* How to use place holders to create holes within 3D objects.	Databases are used to organise information. When searching a database, you are able to refine results by filtering records down to particular fields. 'And' and 'Or' can be used to specify the criteria required in a search.	*Y6 additional flashback* How to combine multiple objects to create a design.

Lesson 1	**WALT:** explain how computer systems are connected to form systems and the roles these systems play in our lives. **Activities:** Learners will develop their understanding of components working together to make a whole. They will outline how digital systems might work and the physical and electronic connections that exist. Learners will consider how devices and processes are connected. They will also reflect on how computer systems can help us. **Children will know:** that a computer system features inputs, processes, and outputs. computer systems communicate with other devices the tasks that are managed by computer systems the human elements of a computer system	**WALT:** recognise video as moving pictures, which can include audio **Activities:** In this lesson, learners have the opportunity to explore a brief history of moving images and video. Through the lesson, they learn that the purpose of recorded video is to engage the audience and share a message. Learners explore the benefits of adding audio to a video and, in groups, begin to develop ideas for their own video project. **Children will know:** that a video can include both visual and audio media the benefits of adding audio to a video how to plan a video project using a storyboard	**WALT:** control a simple circuit connected to a computer **Activities:** In this lesson, learners will become familiar with the Crumble controller, some of its associated components, and the programming environment used to control it. They will explore how the items connect together to create a complete circuit, and how to construct programs that turn an LED on and off and set its colour. Learners will apply their understanding of repetition by identifying how their programs can be modified to make an LED flash continuously. **Children will know:** how to build a simple circuit to connect a microcontroller to a computer how to program a microcontroller to light an LED why an infinite loop is used	**WALT:** use a form to record information **Activities:** In the first lesson, pupils create a paper version of a record card database. Using a card template, they create a data set, with each pupil creating eight to ten cards linked to a theme, eg animals. They complete records for each of the animals in their database and then physically sort the cards to answer questions about the data. **Children will know:** how to create multiple questions about the same field how information can be recorded how to order, sort, and group my data cards	**WALT:** define a 'variable'. **Activities:** In this lesson, pupils will be introduced to variables. Pupils will see examples of real-world variables (score and time in a football match), then they will explore them in a Scratch project. Pupils will then design and make their own project including variables. Finally, pupils will identify that variables are named and can be letters (strings) as well as numbers. **Children will know:** examples of information that is variable the way that a variable changes can be defined variables can hold numbers or letters	**WALT:** identify questions which can be answered using data **Activities:** During this lesson learners will understand that a spreadsheet is a computer application which allows users to organise, analyse, and store data in a table. They will begin to realise the importance of data headings. Learners will answer questions about a spreadsheet, and then create their own questions that can be answered using a given set of data. **Children will know:** the relevance of data headings answer questions from an existing data set ask simple relevant questions which can be answered using data

Lesson 2	**WALT:** know how to use search engines and describe how the results have been selected. **Activities:** They are given the opportunity to explain how to search. Next, they learn that searches do not always return the results that someone is looking for; refine their searches accordingly. Then learners are introduced to the two most common methods of searching: using a search engine and using the address bar. Learners gain an understanding of why search engines are necessary to help them find things on the World Wide Web. They conduct their own searches and break down, in detail, the steps needed to find things on the web. Learners then emulate web crawlers to create an index of their own classroom. Finally, they consider why some searches return more results than others. **Children will know:** how to make use of a web search to find specific information how to refine a web search the role of web crawlers in creating an index how a search term is related to the search engine's index (Y6)	**WALT:** identify digital devices that can record video **Activities:** This lesson provides learners with opportunities to explore devices and apps that record audio and video. Opportunities are included for learners to investigate the pros and cons of audio devices such as dictation machines or mobile sound recorders versus fully integrated AV (audiovisual) devices. Learners can explore devices and locate working features such as the on/off button, record button (start/stop), volume, camera lens, and zoom. Opportunities are provided to develop their project through the storyboard and script. **Children will know:** the name of digital devices that can record video and sound the most suitable digital device for recording their project the working features of a digital device that can record video	**WALT:** write a program that includes count-controlled loops **Activities:** In this lesson, learners will develop their knowledge of a Crumble controller further by connecting additional devices (another Sparkle and a motor) to the controller, and they will construct programs to control more than one of these. They will design sequences of actions for these output devices. They will then apply their understanding of repetition by using count-controlled loops when implementing their design as a program. **Children will know:** how to connect more than one output device to a microcontroller how to design sequences for given output devices which output devices I control with a count-controlled loop	**WALT:** compare paper and computer-based databases **Activities:** In this lesson, pupils use a computer-based database to examine how data can be recorded and viewed. They learn that a database consists of 'records', and that each record contains 'fields'. In addition, they will order records in different ways and compare this database to the paper database they created in lesson 1. **Children will know:** how to navigate a flat-file database to compare different views of information what a 'field' and a 'record' is in a database which field to sort data by to answer a given question	**WALT:** know why a variable is used in a program **Activities:** In this lesson, pupils will understand that variables are used in programs, and that they can hold a single value at a time. Pupils will complete an unplugged task that will demonstrate the process of changing variables. Next, they will explore why it is important to name variables, then they will apply their learning in a Scratch project in which they will make, name, and update variables. **Children will know:** how to identify a program variable as a placeholder in memory for a single value that a variable has a name and a value that the value of a variable can be changed	**WALT:** know that objects can be described using data **Activities:** During this lesson learners will be taught that objects can be described using data. They will build a data set (a collection of related data that can be manipulated using a computer) within a spreadsheet application, and apply appropriate number formats to cells. **Children will know:** what an item of data is how to apply an appropriate number format to a cell how to build a data set in a spreadsheet application

Lesson 3	**WALT:** explain how search results are ranked and why the order is important **Activities:** Learners take part in an unplugged activity to find out about how a webpage's content can influence where it is ranked in search results. In groups, learners create paper-based webpages on a topic that they are familiar with. They then discover how their webpages would rank when searching for keywords relating to their content. **Activities:** Learners take part in an unplugged activity to find out about how a webpage's content can influence where it is ranked in search results. In groups, learners create paper-based webpages on a topic that they are familiar with. They then discover how their webpages would rank when searching for keywords relating to their content. Learners explore how someone performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching. They also explore some of the limitations of searching and discuss what cannot be searched. **Children will know:** that a search engine uses criteria to rank results some of the ways that search results can be influenced, including how they make money the limitations of search engines	**WALT:** capture video using a digital device **Activities:** Learners explore devices and apps, becoming familiar with the devices, functions, and apps. Working collaboratively, they begin to record their video content, considering the use of zoom, angle, and movement (pan). **Children will know:** a suitable device and software to capture their video. suitable methods of using a digital device to capture my video. the safe use and handling of devices	**WALT:** know that a loop can stop when a condition is met, eg number of times **Activities:** In this lesson, learners will be introduced to conditions, and how they can be used in algorithms and programs to control their flow. They will identify conditions in statements, stating if they are true or false, and learn how they can be used to start and stop a set of actions. Learners will be introduced to a Crumble switch, and learn how it can provide the Crumble controller with an input that can be used as a condition. They will explore how to write programs that use an input as a condition, and use this knowledge to write a program that uses a condition to stop a repeating light pattern. **Children will know:** that a condition is something that can be either true or false (eg whether a value is more than 10, or whether a button has been pressed) how to use a 'do until' loop how to program a microcontroller to respond to an input	**WALT:** outline how grouping and then sorting data allows us to answer questions **Activities:** In this lesson, pupils investigate how records can be grouped, using both the paper record cards created in lesson 1 and a computer based database from J2E. They use 'grouping' and 'sorting' to answer questions about the data. **Children will know:** how information can be grouped how to group information to answer questions how to combine grouping and sorting to answer more specific questions	**WALT:** choose how to improve a game by using variables **Activities:** In this lesson, pupils will apply the concept of variables to enhance an existing game in Scratch. They will predict the outcome of changing the same change score block in different parts of a program, then they will test their predictions in Scratch. They will also experiment with using different values in variables, and with using a variable elsewhere in a program. Finally, they will add comments to their project, explaining how they have met the objectives of the lesson. **Children will know:** where in a program to change a variable how to make use of an event in a program to set a variable that the value of a variable can be used by a program	**WALT:** know that formulas can be used to produce calculated data **Activities:** During this lesson learners will begin to use formulas to produce calculated data. They will understand that the type of data in a cell is important (e.g. numbers can be used in calculations whereas words cannot). Learners will create formulas to use in their spreadsheet using cell references and identify that changing inputs will change the output of the calculation. **Children will know:** the relevance of a cell's data type how to construct a formula in a spreadsheet that changing inputs changes outputs

Lesson 4	**WALT**: know the importance of internet addresses and how data is transferred across the internet. **Activities:** Explore different ways that addresses are written. Children to explore and find IP addresses looking at links between different IP addresses. Introduce the idea that parts of a computer system are not always in the same place or country. Instead, those parts of a system must transfer information using the internet. This lesson builds on the introduction to the internet in the Year 4 'What is the internet?' unit, adding awareness of IP addresses and the rules (protocols) that computers have for communicating with one another. **Children will know:** that a computer uses addresses to access websites on the internet. data is transferred using agreed methods. data is transferred over the internet and between networks in packets. the main parts of a data packet (Y6)	**WALT:** recognise the features of an effective video **Activities:** This lesson provides learners with opportunities to investigate further the features of an effective video, including the use of theme, setting, characters, colour, sound, and dialogue. They learn to apply their knowledge as they record their video content in their groups. **Children will know:** • some of the features of an effective video • how to record a video that demonstrates some of the features of an effective video why lighting and angle are important in creating an effective video	**WALT:** know that a loop can be used to repeatedly check whether a condition has been met **Activities:** In this lesson, learners will develop their understanding of how the flow of actions in algorithms and programs can be controlled by conditions. They will be introduced to selection, and learn to represent conditions and actions using the 'if… then…' structure. They will apply their understanding by using selection in an algorithm created to meet the requirements of a task. They will discover that infinite repetition is required when programming input devices to repeatedly check if a condition has been met. **Children will know:** that a condition being met can start an action a condition and an action in their project how to use selection (an 'if… then…' statement) to direct the flow of a program	**WALT:** explain that tools can be used to select specific data **Activities:** In this lesson, pupils develop their search techniques to answer questions about the data. They use advanced techniques to search for more than one field, and practise doing this through both unplugged methods (without using computers), and using a computer database. **Children will know:** which field and value are required to answer a given question how 'AND' and 'OR' can be used to refine data selection how to choose multiple criteria to answer a given question	**WALT:** design a project that builds on a given example **Activities:** This lesson focuses on the design elements of programming. For the majority of the tasks, pupils will be working at the algorithmic level of abstraction. Pupils will first design the sprites and backgrounds for their project, then they will design their algorithms to create their program flow. **Children will know:** that design elements are a necessary part of computer programming. how to explain their design choices how to create algorithms for my project	**WALT:** apply formulas to data, including duplicating **Activities:** During this lesson learners will recognise that data can be calculated using different operations: multiplication, subtraction, division, and addition. They will use these operations to create formulas in a spreadsheet. Learners will then begin to understand the importance of creating formulas that include a range of cells and the advantage of duplicating in order to apply formulas to multiple cells. **Children will know:** that data can be calculated using different operations how to create a formula which includes a range of cells how to apply a formula to multiple cells by duplicating it

Lesson 5	**WALT:** how sharing information online can help people work together and evaluate different ways of doing this. **Activities:** In this lesson, learners will consider how people can work together when they are not in the same location. They will discuss ways of working and start a collaborative online project. Learners will reflect on how they worked together and how their working together might be improved. Learners will work together on an unplugged activity and use that experience to develop their own ideas of good collective working practices. **Children will know:** how to access shared files of different media different ways that information can be sent over the internet. different ways of working together online working together on the internet could be public or private.	**WALT:** know that video can be improved through reshooting and editing **Activities:** This lesson focuses on the technical aspects of exporting video to a computer. It guides learners through the process of making edits to their video, including choosing the best recording, clipping videos, and adding transition effects. It provides learners with opportunities to add images and overlay text. This lesson may be broken down into two smaller parts depending on the available time and the location of the computers that will be used for importing content. **Children will know:** how to store, retrieve, and export my recording to a computer how to improve a video by reshooting and editing how to select the correct tools to make edits to my video	**WALT:** design a physical project that includes selection **Activities:** In this lesson, learners will apply their understanding of microcontrollers, output devices, and selection when designing a project to meet the requirements of a given task. To ensure their understanding, they will identify how selection might be used in real-world situations, then they will consider how they can apply this knowledge when designing their project. They will produce detailed drawings to show how their model will be made and how they will connect the microcontroller to its components. **Children will know:** that a condition can start an action (real world) what their project will do (the task) how to plan their project on paper.	**WALT:** know that computer programs can be used to compare data visually **Activities:** In this lesson, pupils consider what makes a useful chart, and how charts can be used to compare data. They create charts from their data in order to answer questions about it. **Children will know:** how to select an appropriate chart to visually compare data how to refine a chart by selecting a particular filter the benefits of using a computer to create graphs	**WALT:** use my design to create a project **Activities:** In this lesson, pupils will implement the algorithms that they created in Lesson 4 as code. In doing this, they will identify variables in an unfamiliar project and learn the importance of naming variables. They will also have the opportunity to add another variable to enhance their project. **Children will know:** how to choose a name that identifies the role of a variable how to test the code that I have written how to add other variables to make improvements	**WALT:** create a spreadsheet to plan an event **Activities:** During this lesson learners will plan and calculate the cost of an event using a spreadsheet. They will use a predefined list to choose what they would like to include in their event, and use their spreadsheet to answer questions on the data they have selected. Learners will be reminded of the importance of organising data and will then create a spreadsheet using formulas to work out costs for their event. **Children will know:** how to use a spreadsheet to answer questions why data should be organised how to apply a formula to calculate the data I need to answer questions

Lesson 6	**WALT:** recognise and evaluate different methods of online communication. **Activities:** In this lesson, learners will deepen their understanding of the term 'communication'. They will explore different methods of communication, then they will consider internet-based communication in more detail. Finally, they will evaluate which methods of communication suit particular purposes. Learners will use information provided and their own prior knowledge to categorise different forms of internet communication. They will then choose which method they would use for the scenarios discussed. During these activities, they will explore issues around privacy and information security. **Children will know:** recognise and evaluate the most appropriate methods of communication for different purposes, including online methods. which information should and should not be shared online. communication on the internet may not be private.	**WALT:** consider the impact of the choices made when making and sharing a video **Activities:** The unit concludes by enabling learners to review the content of their videos and finalise them by adding special effects, titles, and end credits. The latter part of the lesson prompts learners to discuss what was good about the videos and content, what could be done to improve them, and what did not work so well. Learners are encouraged to both give and respond to feedback from their peers and teacher using a peer-assessment rubric. TIme permitting, videos could be presented to a wider audience at a red carpet assembly. **Children will know:** how to make edits to my video and improve the final outcome that their choices when making a video will impact on the quality of the final outcome how to evaluate my video and share my opinions	**WALT:** create a controllable system that includes selection **Activities:** In this final lesson of the unit, learners will build on the designs that they developed in Lesson 5 by creating an algorithm to meet the requirements of the given task. They will identify how they are going to use selection before writing their algorithm. They will then move into the code level to test their algorithm by implementing it as a program, running it, identifying any bugs, and returning to the algorithm to debug it where necessary. Finally, to conclude the unit, they will evaluate their algorithms and other areas of their designs. **Children will know:** how to write an algorithm to control lights and a motor how to use a selection to produce an intended outcome how to test and debug a project	**WALT:** use knowledge of databases to ask and answer real-world questions **Activities:** The final lesson requires pupils to use a real-life database to ask questions and find answers in the context of a flight search based on set parameters. They take on the role of a travel agent and present their findings, showing how they arrived at their chosen options. Presentations may be given between groups of pupils, or by each group to the whole class, depending on the time available. **Children will know:** how to ask questions that will need more than one field to answer how to refine a search in a real-world context how to present findings to a group	**WALT:** evaluate my project **Activities:** This lesson gives pupils the opportunity to build on the project that they created in Lesson 5. As the lesson develops, the scaffolding is gradually removed, so that the last main activity is without constraints. Finally, pupils will evaluate each other's projects, identifying features that they like, and features that could be improved further. **Children will know:** ways that their game could be improved how to extend their game further using more variables how to evaluate the games of others and give feedback,	**WALT:** know suitable ways to present data **Activities:** During this lesson learners will acquire the skills to create charts in Google Sheets. They will evaluate results based on questions asked using the chart that they have created. Finally, learners will outline their understanding that there are different software tools available within spreadsheet applications to present data. **Children will know:** how to produce a graph how to use a graph to show the answer to questions when to use a table or graph

Key Knowledge	**Children will know:** **Search engines follow specific rules in order to rank search results by relevance.** **Search engines can give higher priority to certain websites that pay them (advertising) this is how they make their money and can be a drawback of the sites** **That a computer system is made up of inputs, processes and outputs. They can communicate between devices.** **Data is transferred in packets over networks in which each device has a unique address (IP address)** **We can access shared information online and we can use this to collaborate and communicate.**	**Children will know:** **Video recording devices include: camcorders, mobile phones, tablets, webcams, digital cameras.** **How to shoot and edit a film.** **How to store, retrieve and export files.**	**Children will know:** **How to set up physical computing circuits to control multiple outputs using a programming tool (motors, lights and buzzers)** **if and then selections can be used to control the direction of a programme.** **That programmes are written using algorithms and we need to test and debug them to make improvements.**	**Children will know:** **Databases are used to organise information.** **When searching a database, you are able to refine results by filtering records down to particular fields.** **'And' and 'Or' can be used to specify the criteria required in a search.**	**Children will know:** **A variable is a value that can change depending on conditions or information inputted into the programme.** **A variable should be named so that its role is clear.** **How to use multiple variables to develop their own game.**	**Children will know:** **Cells can be formatted in different depending on the data that needs to be put into them.** **How to create a formula for different operations and duplicate this over multiple cells.** **How to apply formula in order to answer a range of questions.**