

## Progression Map for Key Stage 2 Computing

### **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.

### **Teaching Computing Taxonomy (TCT)**

The Raspberry Pi Foundation implanted ten content themes or strands that thread through a learner's journey in Computing education. They are:

- AL = Algorithms and Structures
- CM – Creating Media
- CS – Computing Systems
- DD – Design and Development
- DI – Data and Information
- ET – Effective use of tools
- IT – Impact of technology
- NW – Networks
- PG – Programming
- SS – Safety and Security

## COMPUTING

| Year | Unit Name   | Learning Objectives  | Success Criteria  | TCT        |
|------|---|--|---|------------|
| Y3   | Computing systems and networks – Connecting computers | To explain how digital devices function                            | <ul style="list-style-type: none"> <li>- I can explain that digital devices accept inputs</li> <li>- I can explain that digital devices produce outputs</li> <li>- I can follow a process</li> </ul>  | CS         |
|      |   | To identify input and output devices                               | <ul style="list-style-type: none"> <li>- I can classify input and output devices</li> <li>- I can describe a simple process</li> <li>- I can design a digital device</li> </ul>   | CS         |
|      |   | To recognise how digital devices can change the way we work        | <ul style="list-style-type: none"> <li>- I can explain how I use digital devices for different activities</li> <li>- I can recognise similarities between using digital devices and non-digital tools</li> <li>- I can suggest differences between using digital devices and non-digital tools</li> </ul> | CS, IT     |
|      |   | To explain how a computer network can be used to share information | <ul style="list-style-type: none"> <li>- I can discuss why we need a network switch</li> <li>- I can explain how messages are passed through multiple connections</li> <li>- I can recognise different connections</li> </ul>   | CS, NW     |
|      |   | To explore how digital devices can be connected                    | <ul style="list-style-type: none"> <li>- I can demonstrate how information can be passed between devices</li> <li>- I can explain the role of a switch, server, and wireless access point in a network</li> <li>- I can recognise that a computer network is made up of a number of devices</li> </ul>    | CS, NW     |
|      |   | To recognise the physical components of a network                  | <ul style="list-style-type: none"> <li>- I can identify how devices in a network are connected together</li> <li>- I can identify networked devices around me</li> <li>- I can identify the benefits of computer networks</li> </ul>  | CS, NW     |
|      | Creating media - Stop-frame animation                 | To explain that animation is a sequence of drawings or photographs | <ul style="list-style-type: none"> <li>- I can create an effective flip book—style animation</li> <li>- I can draw a sequence of pictures</li> <li>- I can explain how an animation/flip book works</li> </ul>  | CM, ET     |
|      |   | To relate animated movement with a sequence of images              | <ul style="list-style-type: none"> <li>- I can create an effective stop-frame animation</li> <li>- I can explain why little changes are needed for each frame</li> <li>- I can predict what an animation will look like</li> </ul>  | CM, ET     |
|      |   | To plan an animation   | <ul style="list-style-type: none"> <li>- I can break down a story into settings, characters and events</li> <li>- I can create a storyboard</li> <li>- I can describe an animation that is achievable on screen</li> </ul>  | CM, DD     |
|      |   | To identify the need to work consistently and carefully            | <ul style="list-style-type: none"> <li>- I can evaluate the quality of my animation</li> <li>- I can review a sequence of frames to check my work</li> <li>- I can use onion skinning to help me make small changes between frames</li> </ul>   | CM, DD, DI |
|      |   | To review and improve an animation                                 | <ul style="list-style-type: none"> <li>- I can evaluate another learner's animation</li> <li>- I can explain ways to make my animation better</li> <li>- I can improve my animation based on feedback</li> </ul>  | CM, DD, DI |
|      |   | To evaluate the impact of adding other media to an animation       | <ul style="list-style-type: none"> <li>- I can add other media to my animation</li> <li>- I can evaluate my final film</li> <li>- I can explain why I added other media to my animation</li> </ul>  | CM, DD, DI |

|    |   |   |   |                 |
|----|---|---|---|-----------------|
| Y3 | Programming A<br>– Sequencing<br>Sounds       | To explore a new programming environment                          | <ul style="list-style-type: none"> <li>- I can explain that objects in Scratch have attributes (linked to)</li> <li>- I can identify the objects in a Scratch project (sprites, backdrops)</li> <li>- I can recognise that commands in Scratch are represented as blocks</li> </ul>   | ET, PG          |
|    |   | To identify that commands have an outcome                         | <ul style="list-style-type: none"> <li>- I can choose a word which describes an on-screen action for my plan</li> <li>- I can create a program following a design</li> <li>- I can identify that each sprite is controlled by the commands I choose</li> </ul>                        | PG              |
|    |   | To explain that a program has a start                             | <ul style="list-style-type: none"> <li>- I can create a sequence of connected commands</li> <li>- I can explain that the objects in my project will respond exactly to the code</li> <li>- I can start a program in different ways</li> </ul>   | PG              |
|    |   | To recognise that a sequence of commands can have an order        | <ul style="list-style-type: none"> <li>- I can combine sound commands</li> <li>- I can explain what a sequence is</li> <li>- I can order notes into a sequence</li> </ul>   | PG              |
|    |   | To change the appearance of my project                            | <ul style="list-style-type: none"> <li>- I can build a sequence of commands</li> <li>- I can decide the actions for each sprite in a program</li> <li>- I can make design choices for my artwork</li> </ul>   | DD, PG          |
|    |   | To create a project from a task description                       | <ul style="list-style-type: none"> <li>- I can identify and name the objects I will need for a project</li> <li>- I can implement my algorithm as code</li> <li>- I can relate a task description to a design</li> </ul>  | AL., CM, DD, PG |
|    | Data and Information –<br>Branching databases | To create questions with yes/no answers                           | <ul style="list-style-type: none"> <li>- I can create two groups of objects separated by one attribute</li> <li>- I can investigate questions with yes/no answers</li> <li>- I can make up a yes/no question about a collection of objects</li> </ul>                                 | DI              |
|    |   | To identify the attributes needed to collect data about an object | <ul style="list-style-type: none"> <li>- I can arrange objects into a tree structure</li> <li>- I can create a group of objects within an existing group</li> <li>- I can select an attribute to separate objects into groups</li> </ul>  | DI              |
|    |   | To create a branching database                                    | <ul style="list-style-type: none"> <li>- I can group objects using my own yes/no questions</li> <li>- I can select objects to arrange in a branching database</li> <li>- I can test my branching database to see if it works</li> </ul>   | DI, ET          |
|    |   | To explain why it is helpful for a database to be well structured | <ul style="list-style-type: none"> <li>- I can compare two branching database structures</li> <li>- I can create yes/no questions using given attributes</li> <li>- I can explain that questions need to be ordered carefully to split objects into similarly sized groups</li> </ul> | DD, DI, ET      |
|    |   | To plan the structure of a branching database                     | <ul style="list-style-type: none"> <li>- I can create a physical version of a branching database</li> <li>- I can create questions that will enable objects to be uniquely identified</li> <li>- I can independently create questions to use in a branching database</li> </ul>       | DI, ET          |
|    |   | To independently create an identification tool                    | <ul style="list-style-type: none"> <li>- I can create a branching database that reflects my plan</li> <li>- I can suggest real-world uses for branching databases</li> <li>- I can work with a partner to test my identification tool</li> </ul>                                      | DD, DI          |

|    |   |   |   |                |
|----|---|---|---|----------------|
| Y3 | Creating media<br>– Desktop publishing            | To recognise how text and images convey information           | <ul style="list-style-type: none"> <li>- I can explain the difference between text and images</li> <li>- I can identify the advantages and disadvantages of using text and images</li> <li>- I can recognise that text and images can communicate messages clearly</li> </ul> | CM             |
|    |   | To recognise that text and layout can be edited               | <ul style="list-style-type: none"> <li>- I can change font style, size, and colours for a given purpose</li> <li>- I can edit text</li> <li>- I can explain that text can be changed to communicate more clearly</li> </ul>   | CM, ET         |
|    |   | To choose appropriate page settings                           | <ul style="list-style-type: none"> <li>- I can create a template for a particular purpose</li> <li>- I can define the term 'page orientation'</li> <li>- I can recognise placeholders and say why they are important</li> </ul>   | CM, ET         |
|    |   | To add content to a desktop publishing publication            | <ul style="list-style-type: none"> <li>- I can choose the best locations for my content</li> <li>- I can make changes to content after I've added it</li> <li>- I can paste text and images to create a magazine cover</li> </ul>   | CM, ET         |
|    |   | To consider how different layouts can suit different purposes | <ul style="list-style-type: none"> <li>- I can choose a suitable layout for a given purpose</li> <li>- I can identify different layouts</li> <li>- I can match a layout to a purpose</li> </ul>   | CM, DD, ET     |
|    |   | To consider the benefits of desktop publishing                | <ul style="list-style-type: none"> <li>- I can compare work made on desktop publishing to work created by hand</li> <li>- I can identify the uses of desktop publishing in the real world</li> <li>- I can say why desktop publishing might be helpful</li> </ul>             | CM, DD, ET, IT |
|    | Programming B<br>– Events and actions in programs | To explain how a sprite moves in an existing project          | <ul style="list-style-type: none"> <li>- I can choose which keys to use for actions and explain my choices</li> <li>- I can explain the relationship between an event and an action</li> <li>- I can identify a way to improve a program</li> </ul>                           | ET, PG         |
|    |   | To create a program to move a sprite in four directions       | <ul style="list-style-type: none"> <li>- I can choose a character for my project</li> <li>- I can choose a suitable size for a character in a maze</li> <li>- I can program movement</li> </ul>   | ET, PG         |
|    |   | To adapt a program to a new context                           | <ul style="list-style-type: none"> <li>- I can choose blocks to set up my program</li> <li>- I can consider the real world when making design choices</li> <li>- I can use a programming extension</li> </ul>   | PG             |
|    |   | To develop my program by adding features                      | <ul style="list-style-type: none"> <li>- I can build more sequences of commands to make my design work</li> <li>- I can choose suitable keys to turn on additional features</li> <li>- I can identify additional features (from a given set of blocks)</li> </ul>             | PG             |
|    |   | -To identify and fix bugs in a program                        | <ul style="list-style-type: none"> <li>- I can match a piece of code to an outcome</li> <li>- I can modify a program using a design</li> <li>- I can test a program against a given design</li> </ul>   | DD, PG         |
|    |   | To design and create a maze-based challenge                   | <ul style="list-style-type: none"> <li>- I can evaluate my project</li> <li>- I can implement my design</li> <li>- I can make design choices and justify them</li> </ul>  | DD, PG         |

|    |   |   |  |                |
|----|---|---|--|----------------|
| Y4 | Computing systems and networks – The Internet | To describe how networks physically connect to other networks                 | <ul style="list-style-type: none"> <li>- I can demonstrate how information is shared across the internet</li> <li>- I can describe the internet as a network of networks</li> <li>- I can discuss why a network needs protecting</li> </ul>  | NW, SS         |
|    |   | To recognise how networked devices make up the internet                       | <ul style="list-style-type: none"> <li>- I can describe networked devices and how they connect</li> <li>- I can explain that the internet is used to provide many services</li> <li>- I can recognise that the World Wide Web contains websites and web pages</li> </ul>                                       | NW             |
|    |   | To outline how websites can be shared via the World Wide Web (WWW)            | <ul style="list-style-type: none"> <li>- I can describe how to access websites on the WWW</li> <li>- I can describe where websites are stored when uploaded to the WWW</li> <li>- I can explain the types of media that can be shared on the WWW</li> </ul>  | NW             |
|    |   | To describe how content can be added and accessed on the World Wide Web (WWW) | <ul style="list-style-type: none"> <li>- I can explain that internet services can be used to create content online</li> <li>- I can explain what media can be found on websites</li> <li>- I can recognise that I can add content to the WWW</li> </ul>  | CM, NW         |
|    |   | To recognise how the content of the WWW is created by people                  | <ul style="list-style-type: none"> <li>- I can explain that there are rules to protect content</li> <li>- I can explain that websites and their content are created by people</li> <li>- I can suggest who owns the content on websites</li> </ul>   | NW             |
|    |   | To evaluate the consequences of unreliable content                            | <ul style="list-style-type: none"> <li>- I can explain that not everything on the World Wide Web is true</li> <li>- I can explain why I need to think carefully before I share or reshare content</li> <li>- I can explain why some information I find online may not be honest, accurate, or legal</li> </ul> | IT, NW, SS     |
|    | Creating media – Audio production             | To identify that sound can be recorded  | <ul style="list-style-type: none"> <li>- I can explain that the person who records the sound can say who is allowed to use it</li> <li>- I can identify the input and output devices used to record and play sound</li> <li>- I can use a computer to record audio</li> </ul>                                  | CS, DI         |
|    |   | To explain that audio recordings can be edited                                | <ul style="list-style-type: none"> <li>- I can discuss what sounds can be added to a podcast</li> <li>- I can inspect the soundwave view to know where to trim my recording</li> <li>- I can re-record my voice to improve my recording</li> </ul>   | CM, CS, DD, ET |
|    |   | To recognise the different parts of creating a podcast project                | <ul style="list-style-type: none"> <li>- I can explain how sounds can be combined to make a podcast more engaging</li> <li>- I can plan appropriate content for a podcast</li> <li>- I can save my project so the different parts remain editable</li> </ul>   | CM, DD, DI, ET |
|    |   | To apply audio editing skills independently                                   | <ul style="list-style-type: none"> <li>- I can improve my voice recordings</li> <li>- I can record content following my plan</li> <li>- I can review the quality of my recordings</li> </ul>   | CM, ET         |
|    |   | To combine audio to enhance my podcast project                                | <ul style="list-style-type: none"> <li>- I can arrange multiple sounds to create the effect I want</li> <li>- I can explain the difference between saving a project and exporting an audio file</li> <li>- I can open my project to continue working on it</li> </ul>  | CM, ET         |
|    |   | To evaluate the effective use of audio  | <ul style="list-style-type: none"> <li>- I can choose appropriate edits to improve my podcast</li> <li>- I can listen to an audio recording to identify its strengths</li> <li>- I can suggest improvements to an audio recording</li> </ul>   | CM, DD         |

|    |   |   |  |            |
|----|---|---|--|------------|
| Y4 | Programming A<br>– Repetition in shapes | To identify that accuracy in programming is important                           | <ul style="list-style-type: none"> <li>- I can create a code snippet for a given purpose</li> <li>- I can explain the effect of changing a value of a command</li> <li>- I can program a computer by typing commands</li> </ul>  | AL, PG     |
|    |   | To create a program in a text-based language                                    | <ul style="list-style-type: none"> <li>- I can test my algorithm in a text-based language</li> <li>- I can use a template to create a design for my program</li> <li>- I can write an algorithm to produce a given outcome</li> </ul>  | ET         |
|    |   | To explain what 'repeat' means  | <ul style="list-style-type: none"> <li>- I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves</li> <li>- I can identify patterns in a sequence</li> <li>- I can use a count-controlled loop to produce a given outcome</li> </ul> | AL, PG     |
|    |   | To modify a count-controlled loop to produce a given outcome                    | <ul style="list-style-type: none"> <li>- I can choose which values to change in a loop</li> <li>- I can identify the effect of changing the number of times a task is repeated</li> <li>- I can predict the outcome of a program containing a count-controlled loop</li> </ul>           | PG         |
|    |   | To decompose a task into small steps  | <ul style="list-style-type: none"> <li>- I can explain that a computer can repeatedly call a procedure</li> <li>- I can identify 'chunks' of actions in the real world</li> <li>- I can use a procedure in a program</li> </ul>  | AL, PG     |
|    |   | To create a program that uses count-controlled loops to produce a given outcome | <ul style="list-style-type: none"> <li>- I can design a program that includes count-controlled loops</li> <li>- I can develop my program by debugging it</li> <li>- I can make use of my design to write a program</li> </ul>  | PG         |
|    | Data and information –<br>Data logging  | To explain that data gathered over time can be used to answer questions         | <ul style="list-style-type: none"> <li>- I can choose a data set to answer a given question</li> <li>- I can identify data that can be gathered over time</li> <li>- I can suggest questions that can be answered using a given data set</li> </ul>                                      | DI         |
|    |   | To use a digital device to collect data automatically                           | <ul style="list-style-type: none"> <li>- I can explain what data can be collected using sensors</li> <li>- I can identify that data from sensors can be recorded</li> <li>- I can use data from a sensor to answer a given question</li> </ul>   | CS, DI, ET |
|    |   | To explain that a data logger collects 'data points' from sensors over time     | <ul style="list-style-type: none"> <li>- I can identify the intervals used to collect data</li> <li>- I can recognise that a data logger collects data at given points</li> <li>- I can talk about the data that I have captured</li> </ul>  | CS, DI, ET |
|    |   | To recognise how a computer can help us analyse data                            | <ul style="list-style-type: none"> <li>- I can explain that there are different ways to view data</li> <li>- I can sort data to find information</li> <li>- I can view data at different levels of detail</li> </ul>   | DI, ET     |
|    |   | To identify the data needed to answer questions                                 | <ul style="list-style-type: none"> <li>- I can plan how to collect data using a data logger</li> <li>- I can propose a question that can be answered using logged data</li> <li>- I can use a data logger to collect data</li> </ul>   | CS, DI, ET |
|    |   | To use data from sensors to answer questions                                    | <ul style="list-style-type: none"> <li>- I can draw conclusions from the data that I have collected</li> <li>- I can explain the benefits of using a data logger</li> <li>- I can interpret data that has been collected using a data logger</li> </ul>                                  | CS, DI     |

|    |  |   |   |            |
|----|--|---|---|------------|
| Y4 | Creating media<br>– photo editing      | To explain that the composition of digital images can be changed                    | <ul style="list-style-type: none"> <li>- I can explain why I might crop an image</li> <li>- I can improve an image by rotating it</li> <li>- I can use photo editing software to crop an image</li> </ul>   | CM, ET     |
|    |  | To explain that colours can be changed in digital images                            | <ul style="list-style-type: none"> <li>- I can experiment with different colour effects</li> <li>- I can explain that different colour effects make you think and feel different things</li> <li>- I can explain why I chose certain colour effects</li> </ul>                          | CM, ET, IT |
|    |  | To explain how cloning can be used in photo editing                                 | <ul style="list-style-type: none"> <li>- I can add to the composition of an image by cloning</li> <li>- I can identify how a photo edit can be improved</li> <li>- I can remove parts of an image using cloning</li> </ul>  | CM, DD, ET |
|    |  | To explain that images can be combined  | <ul style="list-style-type: none"> <li>- I can experiment with tools to select and copy part of an image</li> <li>- I can explain why photos might be edited</li> <li>- I can use a range of tools to copy between images</li> </ul>  | CM, ET     |
|    |  | To combine images for a purpose   | <ul style="list-style-type: none"> <li>- I can choose suitable images for my project</li> <li>- I can create a project that is a combination of other images</li> <li>- I can describe the image I want to create</li> </ul>  | CM, ET, SS |
|    |  | To evaluate how changes can improve an image  | <ul style="list-style-type: none"> <li>- I can combine text and my image to complete the project</li> <li>- I can review images against a given criteria</li> <li>- I can use feedback to guide making changes</li> </ul>   | CM, DD, ET |
|    | Programming B<br>– Repetition in games | To develop the use of count-controlled loops in a different programming environment | <ul style="list-style-type: none"> <li>- I can list an everyday task as a set of instructions including repetition</li> <li>- I can modify a snippet of code to create a given outcome</li> <li>- I can predict the outcome of a snippet of code</li> </ul>                             | DD, PG     |
|    |  | To explain that in programming there are infinite loops and count controlled loops  | <ul style="list-style-type: none"> <li>- I can choose when to use a count-controlled and an infinite loop</li> <li>- I can modify loops to produce a given outcome</li> <li>- I can recognise that some programming languages enable more than one process to be run at once</li> </ul> | AL, PG     |
|    |  | To develop a design that includes two or more loops which run at the same time      | <ul style="list-style-type: none"> <li>- I can choose which action will be repeated for each object</li> <li>- I can evaluate the effectiveness of the repeated sequences used in my program</li> <li>- I can explain what the outcome of the repeated action should be</li> </ul>      | DD, PG     |
|    |  | To modify an infinite loop in a given program                                       | <ul style="list-style-type: none"> <li>- I can explain the effect of my changes</li> <li>- I can identify which parts of a loop can be changed</li> <li>- I can re-use existing code snippets on new sprites</li> </ul>   | PG         |
|    |  | To design a project that includes repetition  | <ul style="list-style-type: none"> <li>- I can develop my own design explaining what my project will do</li> <li>- I can evaluate the use of repetition in a project</li> <li>- I can select key parts of a given project to use in my own design</li> </ul>                            | DD, PG     |
|    |  | To create a project that includes repetition  | <ul style="list-style-type: none"> <li>- I can build a program that follows my design</li> <li>- I can evaluate the steps I followed when building my project</li> <li>- I can refine the algorithm in my design</li> </ul>   | DD, PG     |

|    |   |  |   |            |
|----|---|--|---|------------|
| Y5 | Computer systems and networks – Systems and searching | To explain that computers can be connected together to form systems        | <ul style="list-style-type: none"> <li>- I can describe that a computer system features inputs, processes, and outputs</li> <li>- I can explain that computer systems communicate with other devices</li> <li>- I can explain that systems are built using a number of parts</li> </ul> | CS         |
|    |   | To recognise the role of computer systems in our lives                     | <ul style="list-style-type: none"> <li>- I can explain the benefits of a given computer system</li> <li>- I can identify tasks that are managed by computer systems</li> <li>- I can identify the human elements of a computer system</li> </ul>  | CS, IT     |
|    |   | To experiment with search engines  | <ul style="list-style-type: none"> <li>- I can compare results from different search engines</li> <li>- I can make use of a web search to find specific information</li> <li>- I can refine my web search</li> </ul>  | NW         |
|    |   | To describe how search engines select results                              | <ul style="list-style-type: none"> <li>- I can explain why we need tools to find things online</li> <li>- I can recognise the role of web crawlers in creating an index</li> <li>- I can relate a search term to the search engine's index</li> </ul>                                   | IT, NW     |
|    |   | To explain how search results are ranked                                   | <ul style="list-style-type: none"> <li>- I can explain that a search engine follows rules to rank results</li> <li>- I can give examples of criteria used by search engines to rank results</li> <li>- I can order a list by rank</li> </ul>  | ET, PG     |
|    |   | To recognise why the order of results is important, and to whom            | <ul style="list-style-type: none"> <li>- I can describe some of the ways that search results can be influenced</li> <li>- I can explain how search engines make money</li> <li>- I can recognise some of the limitations of search engines</li> </ul>                                   | DD, ET, PG |
|    | Creating media – Video production                     | To explain what makes a video effective                                    | <ul style="list-style-type: none"> <li>- I can compare features in different videos</li> <li>- I can explain that video is a visual media format</li> <li>- I can identify features of videos</li> </ul>  | CM, DD     |
|    |   | To identify digital devices that can record video                          | <ul style="list-style-type: none"> <li>- I can experiment with different camera angles</li> <li>- I can identify and find features on a digital video recording device</li> <li>- I can make use of a microphone</li> </ul>   | CM, CS     |
|    |   | To capture video using a range of techniques                               | <ul style="list-style-type: none"> <li>- I can capture video using a range of filming techniques</li> <li>- I can review how effective my video is</li> <li>- I can suggest filming techniques for a given purpose</li> </ul>   | CM, SS     |
|    |   | To create a storyboard   | <ul style="list-style-type: none"> <li>- I can create and save video content</li> <li>- I can decide which filming techniques I will use</li> <li>- I can outline the scenes of my video</li> </ul>   | CM, DD, ET |
|    |   | To identify that video can be improved through reshooting and editing      | <ul style="list-style-type: none"> <li>- I can explain how to improve a video by reshooting and editing</li> <li>- I can select the correct tools to make edits to my video</li> <li>- I can store, retrieve, and export my recording to a computer</li> </ul>                          | CM, ET     |
|    |   | To consider the impact of the choices made when making and sharing a video | <ul style="list-style-type: none"> <li>- I can evaluate my video and share my opinions</li> <li>- I can make edits to my video and improve the final outcome</li> <li>- I can recognise that my choices when making a video will impact on the quality of the final outcome</li> </ul>  | CM, DD, ET |



|    |  |   |  |            |
|----|--|---|--|------------|
| Y5 | Programming A<br>– Selection in physical computing | To control a simple circuit connected to a computer                                     | <ul style="list-style-type: none"> <li>- I can create a simple circuit and connect it to a microcontroller</li> <li>- I can explain what an infinite loop does</li> <li>- I can program a microcontroller to make an LED switch on</li> </ul>  | CS, PG     |
|    |  | To write a program that includes count-controlled loops                                 | <ul style="list-style-type: none"> <li>- I can connect more than one output component to a microcontroller</li> <li>- I can design sequences that use count-controlled loops</li> <li>- I can use a count-controlled loop to control outputs</li> </ul>                              | CS, PG     |
|    |  | To explain that a loop can stop when a condition is met                                 | <ul style="list-style-type: none"> <li>- I can design a conditional loop</li> <li>- I can explain that a condition is either true or false</li> <li>- I can program a microcontroller to respond to an input</li> </ul>  | CS, PG     |
|    |  | To explain that a loop can be used to repeatedly check whether a condition has been met | <ul style="list-style-type: none"> <li>- I can explain that a condition being met can start an action</li> <li>- I can identify a condition and an action in my project</li> <li>- I can use selection (an 'if...then...' statement) to direct the flow of a program</li> </ul>      | PG         |
|    |  | To design a physical project that includes selection                                    | <ul style="list-style-type: none"> <li>- I can create a detailed drawing of my project</li> <li>- I can describe what my project will do</li> <li>- I can identify a real-world example of a condition starting an action</li> </ul>   | CS, DD, PG |
|    |  | To create a program that controls a physical computing project                          | <ul style="list-style-type: none"> <li>- I can test and debug my project</li> <li>- I can use selection to produce an intended outcome</li> <li>- I can write an algorithm that describes what my model will do</li> </ul>   | CS, DD, PG |
|    | Data and information – Flat-file databases         | To use a form to record information   | <ul style="list-style-type: none"> <li>- I can create a database using cards</li> <li>- I can explain how information can be recorded</li> <li>- I can order, sort, and group my data cards</li> </ul>   | DI, ET     |
|    |  | To compare paper and computer-based databases   | <ul style="list-style-type: none"> <li>- I can choose which field to sort data by to answer a given question</li> <li>- I can explain what a field and a record is in a database</li> <li>- I can navigate a flat-file database to compare different views of information</li> </ul> | DD, DI, ET |
|    |  | To outline how you can answer questions by grouping and then sorting data               | <ul style="list-style-type: none"> <li>- I can combine grouping and sorting to answer specific questions</li> <li>- I can explain that data can be grouped using chosen values</li> <li>- I can group information using a database</li> </ul>  | DI         |
|    |  | To explain that tools can be used to select specific data                               | <ul style="list-style-type: none"> <li>- I can choose multiple criteria to answer a given question</li> <li>- I can choose which field and value are required to answer a given question</li> <li>- I can outline how 'AND' and 'OR' can be used to refine data selection</li> </ul> | DI, ET     |
|    |  | To explain that computer programs can be used to compare data visually                  | <ul style="list-style-type: none"> <li>- I can explain the benefits of using a computer to create charts</li> <li>- I can refine a chart by selecting a particular filter</li> <li>- I can select an appropriate chart to visually compare data</li> </ul>                           | DI, ET     |
|    |  | To use a real-world database to answer questions  | <ul style="list-style-type: none"> <li>- I can ask questions that will need more than one field to answer</li> <li>- I can present my findings to a group</li> <li>- I can refine a search in a real-world context</li> </ul>  | DI, ET     |

|    |   |   |  |            |
|----|---|---|--|------------|
| Y5 | Creating media<br>– Introduction to vector graphics | To identify that drawing tools can be used to produce different outcomes  | <ul style="list-style-type: none"> <li>- I can discuss how vector drawings are different from paper-based drawings</li> <li>- I can experiment with the shape and line tools</li> <li>- I can recognise that vector drawings are made using shapes</li> </ul>                                  | CM, DI, ET |
|    |   | To create a vector drawing by combining shapes                            | <ul style="list-style-type: none"> <li>- I can explain that each element added to a vector drawing is an object</li> <li>- I can identify the shapes used to make a vector drawing</li> <li>- I can move, resize, and rotate objects I have duplicated</li> </ul>                              | CM, ET     |
|    |   | To use tools to achieve a desired effect                                  | <ul style="list-style-type: none"> <li>- I can explain how alignment grids and resize handles can be used to improve consistency</li> <li>- I can modify objects to create a new image</li> <li>- I can use the zoom tool to help me add detail to my drawings</li> </ul>                      | CM, ET     |
|    |   | To recognise that vector drawings consist of layers                       | <ul style="list-style-type: none"> <li>- I can change the order of layers in a vector drawing</li> <li>- I can identify that each added object creates a new layer in the drawing</li> <li>- I can use layering to create an image</li> </ul>  | CM, ET     |
|    |   | To group objects to make them easier to work with                         | <ul style="list-style-type: none"> <li>- I can copy part of a drawing by duplicating several objects</li> <li>- I can recognise when I need to group and ungroup objects</li> <li>- I can reuse a group of objects to further develop my vector drawing</li> </ul>                             | CM, ET     |
|    |   | To apply what I have learned about vector drawings                        | <ul style="list-style-type: none"> <li>- I can compare vector drawings to freehand paint drawings</li> <li>- I can create a vector drawing for a specific purpose</li> <li>- I can reflect on the skills I have used and why I have used them</li> </ul>                                       | CM, DD     |
|    | Programming B<br>– Selection in quizzes             | To explain how selection is used in computer programs                     | <ul style="list-style-type: none"> <li>- I can identify conditions in a program</li> <li>- I can modify a condition in a program</li> <li>- I can recall how conditions are used in selection</li> </ul>   | AL, PG     |
|    |   | To relate that a conditional statement connects a condition to an outcome | <ul style="list-style-type: none"> <li>- I can create a program with different outcomes using selection</li> <li>- I can identify the condition and outcomes in an 'if... then... else...' statement</li> <li>- I can use selection in an infinite loop to check a condition</li> </ul>        | AL, PG     |
|    |   | To explain how selection directs the flow of a program                    | <ul style="list-style-type: none"> <li>- I can design the flow of a program which contains 'if... then... else...'</li> <li>- I can explain that program flow can branch according to a condition</li> <li>- I can show that a condition can direct program flow in one of two ways</li> </ul> | AL, PG     |
|    |   | To design a program which uses selection                                  | <ul style="list-style-type: none"> <li>- I can identify the outcome of user input in an algorithm</li> <li>- I can outline a given task</li> <li>- I can use a design format to outline my project</li> </ul>  | DD, PG     |
|    |   | To create a program which uses selection                                  | <ul style="list-style-type: none"> <li>- I can implement my algorithm to create the first section of my program</li> <li>- I can share my program with others</li> <li>- I can test my program</li> </ul>  | DD, PG     |
|    |   | To evaluate my program  | <ul style="list-style-type: none"> <li>- I can extend my program further</li> <li>- I can identify the setup code I need in my program</li> <li>- I can identify ways the program could be improved</li> </ul>   | DD, PG     |

|    |   |   |   |                    |
|----|---|---|---|--------------------|
| Y6 | Computing system and networks – Communication and collaboration | To explain the importance of internet addresses                             | <ul style="list-style-type: none"> <li>- I can describe how computers use addresses to access websites</li> <li>- I can explain that internet devices have addresses</li> <li>- I can recognise that data is transferred using agreed methods</li> </ul>                                  | ET, NW             |
|    |   | To recognise how data is transferred across the internet                    | <ul style="list-style-type: none"> <li>- I can explain that all data transferred over the internet is in packets</li> <li>- I can explain that data is transferred over networks in packets</li> <li>- I can identify and explain the main parts of a data packet</li> </ul>              | ET, NW             |
|    |   | To explain how sharing information online can help people to work together  | <ul style="list-style-type: none"> <li>- I can explain that the internet allows different media to be shared</li> <li>- I can recognise how to access shared files stored online</li> <li>- I can send information over the internet in different ways</li> </ul>                         | ET, NW             |
|    |   | -To evaluate different ways of working together online                      | <ul style="list-style-type: none"> <li>- I can explain how the internet enables effective collaboration</li> <li>- I can identify different ways of working together online</li> <li>- I can recognise that working together on the internet can be public or private</li> </ul>          | ET, IT, NW         |
|    |   | To recognise how we communicate using technology                            | <ul style="list-style-type: none"> <li>- I can choose methods of communication to suit particular purposes</li> <li>- I can explain the different ways in which people communicate</li> <li>- I can identify that there are a variety of ways to communicate over the internet</li> </ul> | ET, NW             |
|    |   | To evaluate different methods of online communication                       | <ul style="list-style-type: none"> <li>- I can compare different methods of communicating on the internet</li> <li>- I can decide when I should and should not share information online</li> <li>- I can explain that communication on the internet may not be private</li> </ul>         | DD, ET, NW         |
|    | Creating media – Web page creation                              | To review an existing website and consider its structure                    | <ul style="list-style-type: none"> <li>- I can discuss the different types of media used on websites</li> <li>- I can explore a website</li> <li>- I know that websites are written in HTML</li> </ul>  | CM, DD, NW         |
|    |   | To plan the features of a web page  | <ul style="list-style-type: none"> <li>- I can draw a web page layout that suits my purpose</li> <li>- I can recognise the common features of a web page</li> <li>- I can suggest media to include on my page</li> </ul>  | CM ,DD             |
|    |   | To consider the ownership and use of images (copyright)                     | <ul style="list-style-type: none"> <li>- I can describe what is meant by the term 'fair use'</li> <li>- I can find copyright-free images</li> <li>- I can say why I should use copyright-free images</li> </ul>   | CM ,DD, SS         |
|    |   | - To recognise the need to preview pages                                    | <ul style="list-style-type: none"> <li>- I can add content to my own web page</li> <li>- I can evaluate what my web page looks like on different devices and suggest/make edits</li> <li>- I can preview what my web page looks like</li> </ul>   | CM ,DD, ET         |
|    |   | To outline the need for a navigation path                                   | <ul style="list-style-type: none"> <li>- I can describe why navigation paths are useful</li> <li>- I can explain what a navigation path is</li> <li>- I can make multiple web pages and link them using hyperlinks</li> </ul>   | CM ,DD, ET, NW     |
|    |   | - To recognise the implications of linking to content owned by other people | <ul style="list-style-type: none"> <li>- I can create hyperlinks to link to other people's work</li> <li>- I can evaluate the user experience of a website</li> <li>- I can explain the implication of linking to content owned by others</li> </ul>                                      | CM ,DD, ET, IT, NW |

|    |   |   |  |            |
|----|---|---|--|------------|
| Y6 | Programming A<br>– Variables in<br>games  | To define a 'variable' as something that is changeable          | <ul style="list-style-type: none"> <li>- I can explain that the way a variable changes can be defined</li> <li>- I can identify examples of information that is variable</li> <li>- I can identify that variables can hold numbers or letters</li> </ul>                   | PG         |
|    |   | To explain why a variable is used in a program                  | <ul style="list-style-type: none"> <li>- I can explain that a variable has a name and a value</li> <li>- I can identify a program variable as a placeholder in memory for a single value</li> <li>- I can recognise that the value of a variable can be changed</li> </ul> | PG         |
|    |   | To choose how to improve a game by using variables              | <ul style="list-style-type: none"> <li>- I can decide where in a program to change a variable</li> <li>- I can make use of an event in a program to set a variable</li> <li>- I can recognise that the value of a variable can be used by a program</li> </ul>             | DD, PG     |
|    |   | To design a project that builds on a given example              | <ul style="list-style-type: none"> <li>- I can choose the artwork for my project</li> <li>- I can create algorithms for my project</li> <li>- I can explain my design choices</li> </ul>   | DD, PG     |
|    |   | To use my design to create a project                            | <ul style="list-style-type: none"> <li>- I can choose a name that identifies the role of a variable</li> <li>- I can create the artwork for my project</li> <li>- I can test the code that I have written</li> </ul>   | DD, PG     |
|    |   | To evaluate my project  | <ul style="list-style-type: none"> <li>- I can identify ways that my game could be improved</li> <li>- I can share my game with others</li> <li>- I can use variables to extend my game</li> </ul>   | DD, PG     |
|    | Data and<br>information -<br>Spreadsheets | To create a data set in a spreadsheet                           | <ul style="list-style-type: none"> <li>- I can collect data</li> <li>- I can enter data into a spreadsheet</li> <li>- I can suggest how to structure my data</li> </ul>  | DI         |
|    |   | To build a data set in a spreadsheet                            | <ul style="list-style-type: none"> <li>- I can apply an appropriate format to a cell</li> <li>- I can choose an appropriate format for a cell</li> <li>- I can explain what an item of data is</li> </ul>  | DI         |
|    |   | To explain that formulas can be used to produce calculated data | <ul style="list-style-type: none"> <li>- I can construct a formula in a spreadsheet</li> <li>- I can explain which data types can be used in calculations</li> <li>- I can identify that changing inputs changes outputs</li> </ul>  | DI, ET, PG |
|    |   | To apply formulas to data                                       | <ul style="list-style-type: none"> <li>- I can apply a formula to multiple cells by duplicating it</li> <li>- I can calculate data using different operations</li> <li>- I can create a formula which includes a range of cells</li> </ul>                                 | DI, ET, PG |
|    |   | To create a spreadsheet to plan an event                        | <ul style="list-style-type: none"> <li>- I can apply a formula to calculate the data I need to answer questions</li> <li>- I can explain why data should be organised</li> <li>- I can use a spreadsheet to answer questions</li> </ul>                                    | DI, ET     |
|    |   | To choose suitable ways to present data                         | <ul style="list-style-type: none"> <li>- I can produce a chart</li> <li>- I can suggest when to use a table or chart</li> <li>- I can use a chart to show the answer to questions</li> </ul>   | CM, DI, ET |

|    |                                     |   |   |            |
|----|-------------------------------------|---|---|------------|
| Y6 | Creating media<br>– 3D Modelling    | To recognise that you can work in three dimensions on a computer          | <ul style="list-style-type: none"> <li>- I can add 3D shapes to a project</li> <li>- I can move 3D shapes relative to one another</li> <li>- I can view 3D shapes from different perspectives</li> </ul>  | CM, ET     |
|    |                                     | To identify that digital 3D objects can be modified                       | <ul style="list-style-type: none"> <li>- I can lift/lower 3D objects</li> <li>- I can recolour a 3D object</li> <li>- I can resize an object in three dimensions</li> </ul>   | CM, ET     |
|    |                                     | To recognise that objects can be combined in a 3D model                   | <ul style="list-style-type: none"> <li>- I can duplicate 3D objects</li> <li>- I can group 3D objects</li> <li>- I can rotate objects in three dimensions</li> </ul>  | CM, ET     |
|    |                                     | To create a 3D model for a given purpose                                  | <ul style="list-style-type: none"> <li>- I can accurately size 3D objects</li> <li>- I can combine a number of 3D objects</li> <li>- I can show that placeholders can create holes in 3D objects</li> </ul>   | CM, ET     |
|    |                                     | To plan my own 3D model   | <ul style="list-style-type: none"> <li>- I can analyse a 3D model</li> <li>- I can choose objects to use in a 3D model</li> <li>- I can combine objects in a design</li> </ul>  | CM, DD, ET |
|    |                                     | To create my own digital 3D model   | <ul style="list-style-type: none"> <li>- I can construct a 3D model based on a design</li> <li>- I can explain how my 3D model could be improved</li> <li>- I can modify my 3D model to improve it</li> </ul>   | CM, DD, ET |
|    | Programming B<br>– Sensing movement | To create a program to run on a controllable device                       | <ul style="list-style-type: none"> <li>- I can apply my knowledge of programming to a new environment</li> <li>- I can test my program on an emulator</li> <li>- I can transfer my program to a controllable device</li> </ul>  | CS, PG     |
|    |                                     | To explain that selection can control the flow of a program               | <ul style="list-style-type: none"> <li>- I can determine the flow of a program using selection</li> <li>- I can identify examples of conditions in the real world</li> <li>- I can use a variable in an if, then, else statement to select the flow of a program</li> </ul>   | CS, PG     |
|    |                                     | To update a variable with a user input                                    | <ul style="list-style-type: none"> <li>- I can experiment with different physical inputs</li> <li>- I can explain that checking a variable doesn't change its value</li> <li>- I can use a condition to change a variable</li> </ul>  | CS, PG     |
|    |                                     | -To use a conditional statement to compare a variable to a value          | <ul style="list-style-type: none"> <li>- I can explain the importance of the order of conditions in else, if statements</li> <li>- I can modify a program to achieve a different outcome</li> <li>- I can use an operand (e.g. &lt;=&gt;) in an if, then statement</li> </ul> | CS, PG     |
|    |                                     | To design a project that uses inputs and outputs on a controllable device | <ul style="list-style-type: none"> <li>I can decide what variables to include in a project</li> <li>- I can design the algorithm for my project</li> <li>- I can design the program flow for my project</li> </ul>  | CS, DD, PG |
|    |                                     | To develop a program to use inputs and outputs on a controllable device   | <ul style="list-style-type: none"> <li>- I can create a program based on my design</li> <li>- I can test my program against my design</li> <li>- I can use a range of approaches to find and fix bugs</li> </ul>  | CS, DD, PG |

| E-Safety |   |
|----------|---|
| Y3       | <p><b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></p> <ul style="list-style-type: none"> <li>• Children will be taught a unit of E-Safety in Autumn 1.</li> <li>• Children will explore and develop their understanding of cyber-bullying and how to prevent it in Anti-Bullying week (Autumn 2).</li> <li>• Children will learn how to use the Internet safely on Safer Internet Day.</li> <li>• Children will produce a poster showing their understanding of E-safety in Spring 2.</li> <li>• Children will share their understanding of e-safety in a pupil voice in the Summer term.</li> </ul> |
| Y4       | <p><b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></p> <ul style="list-style-type: none"> <li>• Children will be taught a unit of E-Safety in Autumn 1.</li> <li>• Children will explore and develop their understanding of cyber-bullying and how to prevent it in Anti-Bullying week (Autumn 2).</li> <li>• Children will learn how to use the Internet safely on Safer Internet Day.</li> <li>• Children will produce a poster showing their understanding of E-safety in Spring 2.</li> </ul> <p>Children will share their understanding of e-safety in a pupil voice in the Summer term.</p>     |
| Y5       | <p><b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></p> <ul style="list-style-type: none"> <li>• Children will be taught a unit of E-Safety in Autumn 1.</li> <li>• Children will explore and develop their understanding of cyber-bullying and how to prevent it in Anti-Bullying week (Autumn 2).</li> <li>• Children will learn how to use the Internet safely on Safer Internet Day.</li> <li>• Children will produce a poster showing their understanding of E-safety in Spring 2.</li> <li>• Children will share their understanding of e-safety in a pupil voice in the Summer term.</li> </ul> |
| Y6       | <p><b>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</b></p> <ul style="list-style-type: none"> <li>• Children will be taught a unit of E-Safety in Autumn 1.</li> <li>• Children will explore and develop their understanding of cyber-bullying and how to prevent it in Anti-Bullying week (Autumn 2).</li> <li>• Children will learn how to use the Internet safely on Safer Internet Day.</li> <li>• Children will produce a poster showing their understanding of E-safety in Spring 2.</li> <li>• Children will share their understanding of e-safety in a pupil voice in the Summer term.</li> </ul> |