**Springfield Primary School**

**Computing**

**EYFS**

**Characteristics of Effective learning (CoEL)**
Children are to have experiences listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world.
**Playing and exploring -** children investigate and experience things, and 'have a go'
**Active learning -** children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
**Creating and thinking critically -** children have and develop their own ideas, make links between ideas, and develop strategies for doing things

**Computing concepts explored throughout the year**
Old and new technology
Smart boards / Ipads
Looking after technology
Appropriate screen time
What to do if you see something online
PSD – keeping safe/managing behaviours
Understanding of the world – people culture & community/past & present

**EYFS Vocab**

| | | |
|---|---|---|
| Computer | Instructions | Left |
| Monitor | Left | Right |
| Keyboard | Right | Forward |
| Mouse | Describe | Backwards |
| Letters | Order | Program |
| Numbers | Sequence | Direction |
| Uppercase | Predict | Algorithm |
| Lowercase | | Instruction |
| Type | Mouse | Sequence |
| Safety | Buttons | Debug |
| Protect | Keyboard | Sort |
| Password | Keys | Categorise |
| Private | Motherboard | Category |
| Secure | USB stick | Group |
| Security | System fan | Branch database |
| Lock | Hard drive | Pictogram |
| Click | Monitor | Graph |
| Power | Computer tower | Data |
| Memory | Speaker | Collect |
| Lens | | Column |
| Image | | Row |

TC – Teach Computing
https://teachcomputing.org/

Esafety lessons (one each half term) – Learning questions are taken from the Cambridgeshire planning

For Digital Matters resources, go to
https://www.internetmatters.org/schools-esafety/primary/

| **Autumn 1 - Computing systems and networks – Technology around us** | | **Y1** |
|---|---|---|
| **Vocab:** technology, computer, mouse, trackpad, keyboard, screen, double-click, typing | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>Technology in our classroom | Esafety – What information can I share online?<br><br>What technology is in our classroom? | • explain how these technology examples help us<br>• explain technology as something that helps us<br>• locate examples of technology in the classroom |
| 2. Using Computer Technology | What are the main parts of a computer? | • name the main parts of a computer<br>• switch on and log into a computer<br>• use a mouse to click and drag |
| 3.Developing mouse skills | How do I use a computer mouse? | • click and drag to make objects on a screen<br>• use a mouse to create a picture<br>• use a mouse to open a program |
| 4. Using a computer keyboard | How do I use a computer keyboard? | • save their work to a file<br>• say what a keyboard is for<br>• type their name on a computer |
| 5. Developing keyboard skills | How do I use the keyboard to edit text? | • delete letters<br>• open their work from a file<br>• use the arrow keys to move the cursor |
| 6. Using a computer responsibly | How do I use a computer safely? | • discuss how we benefit from these rules<br>• give examples of some of these rules<br>• identify rules to keep us safe and healthy when we are using technology in and beyond the home |

| **Autumn 2 – Creating media – Digital painting** | | **Y1** |
|---|---|---|
| **Vocab:** paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | | |
| **TC Lesson** | **Learning Question** | **Pupils can…** |
| 1.<br><br>How can we paint using computers? | Esafety – What is a safe online profile?<br><br>What do different freehand tools do? | • draw lines on a screen and explain which tools they used<br>• make marks on a screen and explain which tools they used<br>• use the paint tools to draw a picture |
| 2. Using shapes and lines | How to I use the shape and line tools? | • make marks with the square and line tools<br>• use the shape and line tools effectively<br>• use the shape and line tools to recreate the work of an artist |
| 3. Making careful choices | How do I make careful choices when painting a digital picture? | • choose appropriate shapes<br>• create a picture in the style of an artist<br>• make appropriate colour choices |
| 4. Why did I choose that? | Can I explain why I chose the tools I used? | • choose paint tools and colours to recreate the work of an artist<br>• say which tools were helpful and why<br>• understand that different paint tools do different jobs |
| 5. Painting all by myself | How do I use a computer on my own to paint a picture? | • change the colour and brush sizes<br>• make dots of colour on the page<br>• use dots of colour to create a picture in the style of an artist |

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| 6.Comparing computer art and painting | How do I compare painting a picture on a computer and on paper? | • explain that pictures can be made in lots of different ways<br>• say whether they prefer painting using a computer or using paper<br>• spot the differences between painting on a computer and on paper |

| **Spring 1 – Programming A – Moving a robot** | | **Y1** |
|---|---|---|
| **Vocab:** Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program | | |
| **TC Lesson** | **Learning Question** | **Pupils can…** |
| 1.<br><br>Buttons | Esafety - How can I get help going online? (BBC)<br><br>What will a given command do? | • match a command to an outcome<br>• predict the outcome of a command on a device<br>• run a command on a device |
| 2.Directions | How do I act out a given word? | • follow an instruction<br>• give directions<br>• recall words that can be acted out |
| 3. Forwards and backwards | How do I combine forwards and backwards commands to make a sequence? | • compare forwards and backwards movements<br>• predict the outcome of a sequence involving forwards and backwards commands<br>• start a sequence from the same place |
| 4. Four directions | How do I combine four direction commands to make sequences? | • compare left and right turns<br>• experiment with turn and move commands to move a robot<br>• predict the outcome of a sequence involving up to four commands |
| 5. Getting there | How do I plan a simple program? | • choose the order of commands in a sequence<br>• debug a program<br>• explain what a program should do |
| 6.Routes | How do I identify solutions to problems? | • identify several possible solutions<br>• plan two programs<br>• use two different programs to get to the same place |

| **Spring 2 – Data and information – Grouping data** | | **Y1** |
|---|---|---|
| **Vocab:** object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | | |
| **TC Lesson** | **Learning Question** | **Pupils can…** |
| 1.<br><br>Label and match | Esafety – What should I do if I feel unsafe online?<br><br>How do I label objects? | • describe objects using labels<br>• identify the label for a group of objects<br>• match objects to groups |
| 2.Group and count | How do I group and count objects? | • count a group of objects<br>• count objects<br>• group objects |
| 3.Describe an object | How do I describe objects in different ways? | • describe an object<br>• describe a property of an object<br>• find objects with similar properties |
| 4.Making different groups | How do I count objects with the same properties? | • count how many objects share a property<br>• group objects in more than one way<br>• group similar objects |
| 5.Comparing groups | How do I compare groups of objects? | • choose how to group objects<br>• describe groups of objects |

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| | | • record how many objects are in a group |
| 6.Answering questions | How do I answer questions about a group of objects? | • compare groups of objects<br>• decide how to group objects to answer a question<br>• record and share what they have found |

| **Summer 1 - Creating media – Digital writing** | | **Y1** |
|---|---|---|
| **Vocab:** word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Exploring the keyboard | Esafety – How do I search for images safely online?<br><br>How do I use a computer to write? | • identify and find keys on a keyboard<br>• open a word processor<br>• recognise keys on a keyboard |
| 2. Adding and removing text | How do I add and remove text on a computer? | • enter text into a computer<br>• use backspace to remove text<br>• use letter, number, and space keys |
| 3. Exploring the toolbar | How do I change the look of text on a computer? | • explain what the keys they have learnt about already do<br>• identify the toolbar and use bold, italic, and underline<br>• type capital letters |
| 4.Making changes to text | What choices can I make when changing text? | • change the font<br>• select all of the text by clicking and dragging<br>• select a word by double-clicking |
| 5.Explaining their choices | How do I choose tools to improve their writing? | • decide if their changes have improved their writing<br>• say what tool they used to change the text<br>• use 'undo' to remove changes |
| 6. Pencil or keyboard | What is the difference between typing on a computer and writing on paper? | • explain the differences between typing and writing<br>• make changes to text on a computer<br>• say why they prefer typing or writing |

| **Summer 2 – Programming B – Programming animations** | | **Y1** |
|---|---|---|
| **Vocab:** ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Comparing tools | Esafety – How can being online feel unsafe?<br><br>How do I choose a command for a given purpose? | • compare different programming tools<br>• find which commands to move a sprite<br>• use commands to move a sprite |
| 2. Joining blocks | How do I show that a series of commands can be joined together? | • run their program<br>• use a Start block in a program<br>• use more than one block by joining them together |
| 3. Make a change | What is the effect of changing a value? | • change the value<br>• find blocks that have numbers<br>• say what happens when they change a value |
| 4. Adding sprites | How do I give instructions to sprites? | • add blocks to each of their sprites<br>• delete a sprite |

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| | | • show that a project can include more than one sprite |
| 5. Project design | How do I design the parts of a project? | • choose appropriate artwork for their project<br>• create an algorithm for each sprite<br>• decide how each sprite will move |
| 6. Following their design | How do I use their own algorithm to create a program? | • add programming blocks based on their algorithm<br>• test the programs they have created<br>• use sprites that match their design |

| **Autumn 1 – Computing systems and networks – IT around us** | | **Y2** |
|---|---|---|
| **Vocab:** Information technology (IT), computer, barcode, scanner/scan | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>What is IT? | Esafety – How can I keep my information safe online?<br><br>What is IT? | • describe some uses of computers<br>• identify examples of computers<br>• identify that a computer is a part of IT |
| 2. IT in school | How is IT used in our school? | • identify examples of IT<br>• identify that some IT can be used in more than one way<br>• sort school IT by what it's used for |
| 3.IT in the world | How is IT used in the world? | • find examples of information technology<br>• sort IT by where it is found<br>• talk about uses of information technology |
| 4.The benefits of IT | What are the benefits of IT? | • demonstrate how IT devices work together<br>• recognise common types of technology<br>• explain why we use IT |
| 5.Using IT safely | How do we use IT safely? | • list different uses of information technology<br>• explain how rules can help keep us safe<br>• talk about different rules for using IT |
| 6.Using IT in different ways | How do we use IT in different ways? | • explain the need to use IT in different ways<br>• identify the choices that we make when using IT<br>• use IT for different types of activities |

| **Autumn 2 - Creating media – Digital photography** | | **Y2** |
|---|---|---|
| **Vocab:** device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>Taking photographs | Esafety – How can I create a safe online profile?<br><br>How do I use a digital device to take a photograph? | • explain what they did to capture a digital photo<br>• recognise what devices can be used to take photographs<br>• talk about how to take a photograph |
| 2. Landscape or portrait? | What are landscape and portrait photographs? | • explain the process of taking a good photograph<br>• explain why a photo looks better in portrait or landscape format<br>• take photos in both landscape and portrait format |
| 3. What makes a good photograph? | What makes a good photograph? | • discuss how to take a good photograph<br>• identify what is wrong with a photograph<br>• improve a photograph by retaking it |
| 4. Lighting | How can photographs be improved? | • experiment with different light sources<br>• explain why a picture may be unclear<br>• explore the effect that light has on a photo |
| 5. Effects | How do I use tools to change an image? | • explain their choices when changing an image<br>• recognise that images can be changed<br>• use a tool to achieve a desired effect |
| 6. Is it real? | How can photos be changed? | • apply a range of photography skills to capture a photo<br>• identify which photos are real and which have been changed<br>• recognise which photos have been changed |

| Spring 1 - Programming A – Robot algorithms | | Y2 |
|---|---|---|
| **Vocab:** instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Giving instructions | Esafety – What can go wrong online? (BBC)<br><br>How do I describe a series of instructions as a sequence? | • choose a series of words that can be enacted as a sequence<br>• follow instructions given by someone else<br>• give clear instructions |
| 2. Same but different | What happens when we change the order of instructions? | • show the difference in outcomes between two sequences that consist of the same commands<br>• use an algorithm to program a sequence on a floor robot<br>• use the same instructions to create different algorithms |
| 3. Making predictions | How do I predict the outcome of a program? | • compare their prediction to the program outcome<br>• follow a sequence<br>• predict the outcome of a sequence |
| 4. Mats and routes | What do we mean by 'code' and 'artwork' in programming? | • explain the choices I made for their mat design<br>• identify different routes around their mat<br>• test their mat to make sure that it is usable |
| 5. Algorithm design | How do I design an algorithm? | • create an algorithm to meet their goal<br>• explain what their algorithm should achieve<br>• use their algorithm to create a program |
| 6. Debugging | How do I create and debug a program that I have written? | • plan algorithms for different parts of a task<br>• put together the different parts of their program<br>• test and debug each part of the program |

| Spring 2 - Data and information – Pictograms | | Y2 |
|---|---|---|
| **Vocab:** more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Counting and comparing | Esafety – What safety tools can I use to keep safe online?<br><br>How do I count and compare objects using tally charts? | • compare totals in a tally chart<br>• record data in a tally chart<br>• represent a tally count as a total |
| 2.Enter the data | How can objects can be represented as pictures? | • enter data onto a computer<br>• use a computer to view data in a different format<br>• use pictograms to answer simple questions about objects |
| 3. Creating pictograms | How do I create a pictogram? | • explain what the pictogram shows<br>• organise data in a tally chart<br>• use a tally chart to create a pictogram |
| 4. What is an attribute? | How do I select objects by attribute and make comparisons? | • answer 'more than'/'less than' and 'most/least' questions<br>• create a pictogram to arrange objects by an attribute<br>• tally objects using a common attribute |
| 5. Comparing people | How do I describe by attributes? | • choose a suitable attribute to compare people<br>• collect the data they need |

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| | | • create a pictogram and draw conclusions from it |
| 6.Presenting information | How do I use a computer to present information? | • share what they have found out using a computer<br>• use a computer program to present information |

| **Summer 1 - Creating media - Digital music** | | **Y2** |
|---|---|---|
| **Vocab:** music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>How music makes us feel | Esafety – What are safe and unsafe websites?<br><br>How does music make us feel? | • describe music using adjectives<br>• identify simple differences in pieces of music<br>• explain what they do and do not like about a piece of music |
| 2. Rhythms and patterns | How do I identify patterns in music? | • create a rhythm pattern<br>• explain that music is created and played by humans<br>• play an instrument following a rhythm pattern |
| 3. How music can be used | How do I use a computer to experiment with sound? | • connect images with sounds<br>• relate an idea to a piece of music<br>• use a computer to experiment with pitch |
| 4. Notes and tempo | How do I use a computer to create a musical pattern? | • explain how their music can be played in different ways<br>• identify that music is a sequence of notes<br>• refine their musical pattern on a computer |
| 5. Creating digital music | How do I create music for a purpose? | • add a sequence of notes to their rhythm<br>• create a rhythm which represents an animal they have chosen<br>• create their animal's rhythm on a computer |
| 6. Reviewing and editing music | How do I review and refine our computer work? | • explain how they changed their work<br>• listen to music and describe how it makes them feel<br>• review their work |

| **Summer 2 - Programming B - Programming quizzes** | | **Y2** |
|---|---|---|
| **Vocab:** sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>ScratchJr recap | Esafety – Can I identify what might make me feel unsafe online?<br><br>How do I identify the start of a sequence of commands? | • identify that a program needs to be started<br>• identify the start of a sequence<br>• show how to run their program |
| 2. Outcomes | What is the outcome of a sequence of commands? | • change the outcome of a sequence of commands<br>• match two sequences with the same outcome<br>• predict the outcome of a sequence of commands |
| 3.Using a design | How do I create a program using a given design? | • build the sequences of blocks they need<br>• decide which blocks to use to meet the design<br>• work out the actions of a sprite in an algorithm |
| 4. Changing a design | How do I change a given design? | • choose backgrounds for a design<br>• choose characters for a design |

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| | | • create a program based on the new design |
| 5.Designing and creating a program | How do I create a program using their own design? | • build sequences of blocks to match their design<br>• choose the images for their own design<br>• create an algorithm |
| 6. Evaluating | How can their project be improved? | • compare their project to their design<br>• debug and improve their project by adding features |

| **Autumn 1 – Computing systems and networks – Connecting computers** | | **Y3** |
|---|---|---|
| **Vocab:** digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.How does a digital device work? | Esafety – How can I be safe online?<br><br>How does a digital device work? | • explain that digital devices accept input<br>• explain that digital devices produce outputs<br>• follow a process |
| 2.What parts make up a digital device? | What parts make up a digital device? | • classify input and output devices<br>• describe a simple process<br>• design a digital device |
| 3.How do digital devices help us? | How do digital devices help us? | • explain how they use digital devices for different activities<br>• identify similarities between digital devices and non-digital tools<br>• identify differences between digital devices and non-digital tools |
| 4. How am I connected? | How can a computer network be used to share information? | • discuss why we need a network switch<br>• explain how messages pass through multiple connections<br>• recognise different connections |
| 5. How are computers connected? | How are computers connected? | • demonstrate how information can be passed between devices<br>• explain the role of a switch, server, and wireless access point<br>• recognise that a network is made up of a number of devices |
| 6. What does our school network look like? | What does our school network look like? | • identify how devices in a network are connected together<br>• identify networked devices around us<br>• identify the benefits of computer networks |

| **Autumn 2 – Creating media – Stop-frame animation** | | **Y3** |
|---|---|---|
| **Vocab:** animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Can a picture move? | Esafety – What do I use technology for?<br><br>What is an animation? | • create an effective flip book—style animation<br>• draw a sequence of pictures<br>• explain how an animation/flip book works |
| 2. Frame by frame? | How do I create animated movement with a sequence of images? | • create an effective stop-frame animation<br>• explain why little changes are needed for each frame<br>• predict what an animation will look like |
| 3. What's the story? | How do I plan an animation? | • break down a story into settings, characters and events<br>• create a storyboard<br>• describe an animation that is achievable on screen |
| 4. Picture perfect | Why is it important to work consistently and carefully? | • evaluate the quality of their animation<br>• review a sequence of frames to check their work |

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| | | • use onion skinning to help them make changes between frames |
| 5. Evaluate and make it great! | How do I review and improve an animation? | • evaluate another learner's animation<br>• explain ways to make their animation better<br>• improve their animation based on feedback |
| 6. Lights, camera, action! | What is the impact of adding other media to an animation? | • add other media to their animation<br>• evaluate their final film<br>• explain why they added other media to their animation |

| **Spring 1 - Programming A - Sequencing sounds** | | **Y3** |
|---|---|---|
| **Vocab:** Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Introduction to Scratch | Esafety – How can I get back on track from binge watching? (BBC)<br><br>How do I explore a new programming environment? | • explain that objects in Scratch have attributes (linked to)<br>• identify the objects in a Scratch project (sprites, backdrops)<br>• recognise that commands in Scratch are represented as blocks |
| 2. Programming sprites | How do I create commands to achieve an outcome? | • choose a word which describes an on-screen action for their plan<br>• create a program following a design<br>• identify that each sprite is controlled by chosen commands |
| 3. Sequences | How do I start a program in different ways? | • create a sequence of connected commands<br>• explain that the objects in their project will respond to the code<br>• start a program in different ways |
| 4. Ordering commands | How do I put a sequence of commands into an order? | • combine sound commands<br>• explain what a sequence is<br>• order notes into a sequence |
| 5. Looking good | How do I change the appearance of my project? | • build a sequence of commands<br>• decide the actions for each sprite in a program<br>• make design choices for their artwork |
| 6. Making an instrument | How do I create a project from a task description? | • identify and name the objects they will need for a project<br>• implement their algorithm as code<br>• relate a task description to a design |

| **Spring 2 - Data and information – Branching databases** | | **Y3** |
|---|---|---|
| **Vocab:** attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Yes or no questions | Esafety – What are the SMART rules?<br><br>How do I create questions with yes/no answers? | • create two groups of objects separated by one attribute<br>• investigate questions with yes/no answers<br>• make up a yes/no question about a collection of objects |
| 2. Making groups | What attributes are needed to collect data about an object? | • arrange objects into a tree structure<br>• create a group of objects within an existing group<br>• select an attribute to separate objects into groups |
| 3. Creating a branching database | How do I create a branching database? | • group objects using their own yes/no questions<br>• select objects to arrange in a branching database |

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| | | • test their branching database to see if it works |
| 4. Structuring a branching database | Why it is helpful for a database to be well structured? | • compare two branching database structures<br>• create yes/no questions using given attributes<br>• explain that questions need to be ordered carefully to split objects into similarly sized groups |
| 5. Planning a branching database | How do I plan the structure of a branching database? | • create a physical version of a branching database<br>• create questions that will enable objects to be uniquely identified<br>• independently create questions to use in a branching database |
| 6. Two ways of presenting information | How do I create an identification tool? | • create a branching database that reflects their plan<br>• suggest real-world uses for branching databases<br>• work with a partner to test their identification tool |

| **Summer 1 - Creating media – Desktop publishing** | | **Y3** |
|---|---|---|
| **Vocab:** text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Words and pictures | Esafety – How do I manage online friendships? (BBC Bitesize)<br><br>How do text and images convey information? | • explain the difference between text and images<br>• identify the advantages and disadvantages of using text and images<br>• recognise that text and images can communicate messages |
| 2. Can you edit it? | How do I edit text and layout? | • change font style, size, and colours for a given purpose<br>• edit text<br>• explain that text can be changed to communicate more clearly |
| 3. Great template! | How do I choose appropriate page settings? | • create a template for a particular purpose<br>• define the term 'page orientation'<br>• recognise placeholders and say why they are important |
| 4. Becoming a designer | How do I add content to a desktop publishing publication? | • choose the best locations for their content<br>• make changes to content after they have added it<br>• paste text and images to create a magazine cover |
| 5. Lay it out | How do different layouts suit different purposes? | • choose a suitable layout for a given purpose<br>• identify different layouts<br>• match a layout to a purpose |
| 6. Why desktop publishing? | What are the benefits of desktop publishing? | • compare work made on desktop publishing and work made by hand<br>• identify the uses of desktop publishing in the real world<br>• say why desktop publishing might be helpful |

| **Summer 2 - Programming B - Events and actions in programs** | | **Y3** |
|---|---|---|
| **Vocab:** motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Moving a sprite | Esafety – Can I recognise when I might feel uncomfortable online?<br><br>How do I explain the movement of a sprite in an existing project? | • choose which keys to use for actions and explain their choices<br>• explain the relationship between an event and an action<br>• identify a way to improve a program |

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| 2. Maze movement | How do I create a program to move a sprite in four directions? | • choose a character for their project<br>• choose a suitable size for a character in a maze<br>• program movement |
| 3. Draw lines | How do I adapt a program to a new context? | • choose blocks to set up their program<br>• consider the real world when making design choices<br>• use a programming extension |
| 4. Adding features | How do I develop their program by adding features? | • build additional sequences of commands to make their design work<br>• choose suitable keys to turn on additional features<br>• identify additional features (from a given set of blocks) |
| 5. Debugging movement | How do I identify and fix bugs in a program? | • match a piece of code to an outcome<br>• modify a program using a design<br>• test a program against a given design |
| 6. Making a project | How do I design and create a maze-based challenge? | • evaluate their project<br>• implement their design<br>• make design choices and justify them |

| **Autumn 1 - Computing systems and networks – Connecting computers - The Internet** | | **Y4** |
|---|---|---|
| **Vocab:** internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Connecting networks | Esafety – What risky situations might I face online?<br><br>How do networks connect to other networks? | • demonstrate how information is shared across the internet<br>• describe the internet as a network of networks<br>• discuss why a network needs protecting |
| 2. What is the internet made of? | What is the internet made of? | • describe networked devices and how they connect<br>• explain that the internet is used to provide many services<br>• recognise that the WWW contains websites and web pages |
| 3. Sharing information | How can websites be shared? | • describe how to access websites on the WWW<br>• describe where websites are stored when uploaded<br>• explain the types of media that can be shared on the WWW |
| 4. What is a website? | What is a website? | • explain that internet services can be used to create content<br>• explain what media can be found on websites<br>• recognise that they can add content to the WWW |
| 5. Who owns the web? | Who owns the WWW? | • explain that there are rules to protect content<br>• explain that websites and their content are created by people<br>• suggest who owns the content on websites |
| 6. Can I believe what I read? | Can I believe what I read on the internet? | • explain that not everything on the World Wide Web is true<br>• explain why they need to think carefully before they share or re-share<br>• explain why some information is not honest, accurate, or legal |

| **Autumn 2 - Creating media - Audio production** | | **Y4** |
|---|---|---|
| **Vocab:** audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |

| | | |
|---|---|---|
| 1.Recording sound | Esafety – Can I identify the risks in my own use of technology?<br><br>How is sound recorded? | • explain that the person who records the sound can say who is allowed to use it<br>• identify the input and output devices used to record and play sound<br>• use a computer to record audio |
| 2. Editing audio | How can audio recordings be edited? | • discuss what sounds can be added to a podcast<br>• inspect the soundwave view to know where to trim their recording<br>• re-record their voice to improve their recording |
| 3. Planning a podcast | What are the features of a podcast project? | • explain how sounds can be used to make a podcast<br>• plan appropriate content for a podcast<br>• save their project so the different parts remain editable |
| 4. Creating a podcast | How do I apply audio editing skills to their project? | • improve their voice recordings<br>• record content following their plan<br>• review the quality of their recordings |
| 5. Behind the scenes | How do I combine audio to enhance their podcast project? | • arrange multiple sounds to create the effect they want<br>• explain 'saving a project' and 'exporting an audio file'<br>• open their project to continue working on it |
| 6. Evaluating podcasts | How do I evaluate the effective use of audio? | • choose appropriate edits to improve their podcast<br>• listen to an audio recording to identify its strengths<br>• suggest improvements to an audio recording |

| **Spring 1 – Programming A – Repetition in shapes** | | **Y4** |
|---|---|---|
| **Vocab:** Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Programming a screen turtle | Esafety - How do I deal with not spending too much time online? (BBC)<br><br>Why is accuracy in programming important? | • create a code snippet for a given purpose<br>• explain the effect of changing a value of a command<br>• program a computer by typing commands |
| 2. Programming letters | How do I create a program in a text-based language? | • test their algorithm in a text-based language<br>• use a template to create a design for their program<br>• write an algorithm to produce a given outcome |
| 3. Patterns and repeats | What does 'repeat' mean? | • identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves<br>• identify patterns in a sequence<br>• use a count-controlled loop to produce a given outcome |
| 4. Using loops to create shapes. | How do I modify a count-controlled loop to produce a given outcome? | • choose which values to change in a loop<br>• identify the effect of changing the number of times a task is repeated<br>• predict the outcome of a program with a count-controlled loop |
| 5. Breaking things down | How do I decompose a task into small steps? | • explain that a computer can repeatedly call a procedure<br>• identify 'chunks' of actions in the real world<br>• use a procedure in a program |
| 6. Creating a program | How do I create a program that uses count-controlled loops to | • design a program that includes count-controlled loops<br>• develop their program by debugging it |

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| | produce a given outcome? | • make use of their design to write a program |

| **Spring 2 – Data and information – Data logging** | | **Y4** |
|---|---|---|
| **Vocab:** data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Answering questions | Esafety – Can I explain how I can use the SMART rules to help me?<br><br>How can data be used to answer questions? | • choose a data set to answer a given question<br>• identify data that can be gathered over time<br>• suggest questions that can be answered using a data set |
| 2. Data collection | How do I use a digital device to collect data automatically? | • explain what data can be collected using sensors<br>• identify that data from sensors can be recorded<br>• use data from a sensor to answer a given question |
| 3. Logging | How does a data logger collect 'data points' from sensors over time? | • identify the intervals used to collect data<br>• recognise that a data logger collects data at given points<br>• talk about the data that they have captured |
| 4. Analysing data | How does a computer help us analyse data? | • explain that there are different ways to view data<br>• sort data to find information<br>• view data at different levels of detail |
| 5. Data for answers | How do I identify the data needed to answer questions? | • plan how to collect data using a data logger<br>• propose a question that can be answered using logged data<br>• use a data logger to collect data |
| 6. Answering their question | How do I use data from sensors to answer questions? | • draw conclusions from the data that they have collected<br>• explain the benefits of using a data logger<br>• interpret data that has been collected using a data logger |

| **Summer 1 – Creating media – Photo editing** | | **Y4** |
|---|---|---|
| **Vocab:** image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Changing digital images | Esafety – What are online relationships? (BBC Bitesize)<br><br>How can the composition of digital images be changed? | • explain why they might crop an image<br>• improve an image by rotating it<br>• use photo editing software to crop an image |
| 2. Recolouring | How do I change colours in digital images? | • experiment with different colour effects<br>• explain that different colour effects make use think and feel different things<br>• explain why they chose certain colour effects |
| 3. Cloning | How can cloning be used in photo editing? | • add to the composition of an image by cloning<br>• identify how a photo edit can be improved<br>• remove parts of an image using cloning |
| 4. Combining | How can images be combined? | • experiment with tools to select and copy part of an image<br>• explain why photos might be edited<br>• use a range of tools to copy between images |
| 5. Creating | How do I combine images for a purpose? | • choose suitable images for their project<br>• create a project that is a combination of other images |

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| | | • describe the image they want to create |
| 6. Evaluating | How do I evaluate how changes can improve an image? | • combine text and their image to complete a project<br>• review images against a given criteria<br>• use feedback to guide making changes |

| **Summer 2 – Programming B – Repetition in games** | | **Y4** |
|---|---|---|
| **Vocab:** Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Using loops to create shapes | Esafety – How do I report something that worries me online?<br><br>How do I develop the use of count-controlled loops in a different environment? | • list an everyday task as a set of instructions including repetition<br>• modify a snippet of code to create a given outcome<br>• predict the outcome of a snippet of code |
| 2. Different loops | What are infinite loops and count controlled loops? | • choose when to use a count-controlled and an infinite loop<br>• modify loops to produce a given outcome<br>• identify that sometimes more than one process can run at once |
| 3. Animate your name | How do I develop a design that includes two or more loops which run at the same time? | • choose which action will be repeated for each object<br>• evaluate the effectiveness of repeated sequences<br>• explain what the outcome of the repeated action should be |
| 4.Modifying a game | How do I modify an infinite loop in a given program? | • explain the effect of their changes<br>• identify which parts of a loop can be changed<br>• re-use existing code snippets on new sprites |
| 5. Designing a game | How do I design a project that includes repetition? | • develop their own design explaining what their project will do<br>• evaluate the use of repetition in a project<br>• select key parts of a given project to use in their own design |
| 6. Creating our games | How do I create a project that includes repetition? | • build a program that follows their design<br>• evaluate the steps they followed when building their project<br>• refine the algorithm in their design |

| **Autumn 1 – Computing systems and networks - Systems and searching** | | **Y5** |
|---|---|---|
| **Vocab:** system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>Systems | Esafety – What are healthy online relationships? (Digital Matters)<br><br>How do computers link to form systems? | • describe that a computer system has inputs, processes and outputs<br>• explain that computer systems communicate with other devices<br>• explain that systems are built using a number of parts |
| 2. Computer systems and us | How do computer systems impact our lives? | • explain the benefits of a given computer system<br>• identify tasks that are managed by computer systems<br>• identify the human elements of a computer system |
| 3. Searching the web | How do I experiment with search engines? | • compare results from different search engines<br>• make use of a web search to find specific information<br>• refine their web search |

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| 4. Selecting search results | How do search engines select results? | • explain why we need tools to find things online<br>• recognise the role of web crawlers in creating an index<br>• relate a search term to the search engine's index |
| 5. How search results are ranked | How are search results ranked? | • explain that a search engine follows rules to rank results<br>• give examples of criteria used by search engines to rank results<br>• order a list by rank |
| 6. How are searches influenced? | How are search results influenced? | • describe some of the ways that search results can be influenced<br>• explain how search engines make money<br>• recognise some of the limitations of search engines |

| **Autumn 2 – Creating media – Video production** | | **Y5** |
|---|---|---|
| **Vocab:** video, audio, camera, talking head, panning, close up, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.What is video? | Esafety - Can I use my knowledge to create a safe online profile? (Privacy & security Digital Matters)<br><br>What makes a video effective? | • compare features in different videos<br>• explain that video is a visual media format<br>• identify features of videos |
| 2. Filming techniques | Which digital devices can record video? | • experiment with different camera angles<br>• identify and find features on a digital video recording device<br>• make use of a microphone |
| 3. Using a storyboard | How do I capture video using a range of techniques? | • capture video using a range of filming techniques<br>• review how effective their video is<br>• suggest filming techniques for a given purpose |
| 4. Planning a video | How do I create a storyboard? | • create and save video content<br>• decide which filming techniques they will use<br>• outline the scenes of their video |
| 5. Importing and editing video | How can a video be improved through reshooting and editing? | • explain how to improve a video by reshooting and editing<br>• select the correct tools to make edits to their video<br>• store, retrieve, and export their recording to a computer |
| 6. Video evaluation | What should I consider when making and sharing a video? | • evaluate their video and share their opinions<br>• make edits to their video and improve the final outcome<br>• recognise that their choices when making a video will impact on the quality of the final outcome |

| **Spring 1 – Programming A – Selection in physical computing** | | **Y5** |
|---|---|---|
| **Vocab:** microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1. Connecting Crumbles | Esafety – How do I manage my screen time? (Digital Matters)<br><br>How do I control a simple circuit connected to a computer? | • create a simple circuit and connect it to a microcontroller<br>• explain what an infinite loop does<br>• program a microcontroller to make an LED switch on |

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| 2. Combining output components | How do I write a program that includes count-controlled loops? | • connect more than one output component to a microcontroller<br>• design sequences that use count-controlled loops<br>• use a count-controlled loop to control outputs |
| 3. Controlling with conditions | Why does a loop stop when a condition is met? | • design a conditional loop<br>• explain that a condition is either true or false<br>• program a microcontroller to respond to an input |
| 4. Starting with selection | How does a loop repeatedly check whether a condition has been met? | • explain that a condition being met can start an action<br>• identify a condition and an action in their project<br>• use selection (an 'if…then…' statement) to direct a program |
| 5. Drawing designs | How do I design a physical project that includes selection? | • create a detailed drawing of their project<br>• describe what their project will do<br>• identify a real-world example of a condition starting an action |
| 6. Writing and testing algorithms | How do I create a program that controls a physical computing project? | • create a database using cards<br>• explain how information can be recorded<br>• order, sort, and group their data cards |

| **Spring 2 – Data and information – Flat-file databases** | | **Y5** |
|---|---|---|
| **Vocab:** database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Creating a paper-based database | Esafety – How can I safeguard myself online? (Phishing and scams. BBC Bitesize)<br><br>How do I use a form to record information? | • create a database using cards<br>• explain how information can be recorded<br>• order, sort, and group their data cards |
| 2. Computer databases | How do I compare paper and computer-based databases? | • choose which field to sort data by to answer a given question<br>• explain what a field and a record is in a database<br>• navigate a flat-file database to compare different views of information |
| 3. Using a database | How can I answer questions by grouping and then sorting data? | • combine grouping and sorting to answer specific questions<br>• explain that data can be grouped using chosen values<br>• group information using a database |
| 4. Using search tools | How can tools be used to select specific data? | • choose multiple criteria to answer a given question<br>• choose which field and value are required to answer a given question<br>• outline how 'AND' and 'OR' can be used to refine data selection |
| 5. Comparing data visually | How can computer programs be used to compare data visually? | • explain the benefits of using a computer to create charts<br>• refine a chart by selecting a particular filter<br>• select an appropriate chart to visually compare data |
| 6. Databases in real life | How do I use a real-world database to answer questions? | • ask questions that will need more than one field to answer<br>• present their findings to a group<br>• refine a search in a real-world context |

| Summer 1 – Creating media – Introduction to vector graphics | | Y5 |
|---|---|---|
| **Vocab:** vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.<br><br>The drawing tools | Esafety - Is it funny or is It hate? (Digital Matters)<br><br>How can I use drawing tools to produce different outcomes? | • recognise that vector drawings are made using shapes<br>• experiment with the shape and line tools<br>• discuss how vector drawings are different from paper-based drawings |
| 2. Creating images | How do I create a vector drawing by combining shapes? | • identify the shapes used to make a vector drawing<br>• explain that each element added to a vector drawing is an object<br>• move, resize, and rotate objects they have duplicated |
| 3. Making effective drawings | How do I use tools to achieve a desired effect? | • use the zoom tool to help them add detail to their drawings<br>• explain how alignment grids and resize handles can be used to improve consistency<br>• modify objects to create a new image |
| 4. Layers and objects | Why do vector drawings consist of layers? | • identify that each added object creates a new layer in the drawing<br>• change the order of layers in a vector drawing<br>• use layering to create an image |
| 5. Manipulating objects | How do I group objects to make them easier to work with? | • copy part of a drawing by duplicating several objects<br>• recognise when they need to group and ungroup objects<br>• reuse a group of objects to further develop their vector drawing |
| 6. Becoming a graphic designer | How do I apply what I have learned about vector drawings? | • create a vector drawing for a specific purpose<br>• reflect on the skills they have used and why they have used them<br>• compare vector drawings to freehand paint drawings |

| Summer 2 – Programming B – Selection in quizzes | | Y5 |
|---|---|---|
| **Vocab:** Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Exploring conditions | Esafety - What do I need to think about before sharing online? (Digital Matters)<br><br>How is selection used in computer programs? | • recall how conditions are used in selection<br>• identify conditions in a program<br>• modify a condition in a program |
| 2. Selecting outcomes | How does a conditional statement connect a condition to an outcome? | • use selection in an infinite loop to check a condition<br>• identify the condition and outcomes in an 'if... then… else...' statement<br>• create a program with different outcomes using selection |
| 3. Asking questions | How does selection direct the flow of a program? | • explain that program flow can branch according to a condition<br>• design the flow of a program which contains 'if… then… else…'<br>• show that a condition can direct program flow in one of two ways |
| 4. Planning a quiz | How do I design a program which uses selection? | • outline a given task<br>• use a design format to outline their project<br>• identify the outcome of user input in an algorithm |
| 5. Testing a quiz | How do I create a program which uses selection? | • implement their algorithm to create the first section of their program<br>• test their program<br>• share their program with others |
| 6. Evaluating a quiz | How do I evaluate their program? | • identify ways the program could be improved<br>• identify the setup code they need in their program<br>• extend their program further |

| **Autumn 1 – Computing systems and networks – Communication and collaboration** | | **Y6** |
|---|---|---|
| **Vocab:** protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Internet addresses | Esafety – What is my self-image and identity? (Digital Matters)<br><br>Why are internet addresses important? | • recognise that data is transferred using agreed methods<br>• explain that internet devices have addresses<br>• describe how computers use addresses to access websites |
| 2. Data packets | How is data transferred across the internet? | • identify and explain the main parts of a data packet<br>• explain that data is transferred over networks in packets<br>• explain that all data transferred over the internet is in packets |
| 3. Working together | How can the sharing of information online can help people to work together? | • recognise how to access shared files stored online<br>• send information over the internet in different ways<br>• explain that the internet allows different media to be shared |
| 4. Shared working | How can we work together online? | • identify different ways of working together online<br>• recognise that working together on the internet can be public or private<br>• explain how the internet enables effective collaboration |
| 5. How we communicate | How do we communicate using technology? | • explain the different ways in which people communicate<br>• identify the variety of ways we communicate over the internet<br>• choose methods of communication to suit particular purposes |
| 6. Communicating responsibly | How do I evaluate different methods of online communication? | • can compare different methods of communicating on the internet<br>• decide when they should and should not share information online<br>• explain that communication on the internet may not be private |

| **Autumn 2 – Creating media – Web page creation** | | **Y6** |
|---|---|---|
| **Vocab:** website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.What makes a good website? | Esafety - Can I review and improve my online profile? (Privacy & security. Digital Matters)<br><br>What makes a good website? | • explore a website<br>• discuss the different types of media used on websites<br>• understand that websites are written in HTML |
| 2. Becoming a web designer | What are the features of a web page? | • recognise the common features of a web page<br>• suggest media to include on their page<br>• draw a web page layout that suits their purpose |
| 3. Copyright or CopyWRONG? | What is the meaning of copy-right? | • explain why they should use copyright-free images<br>• find copyright-free images<br>• describe what is meant by the term 'fair use' |
| 4. How does it look? | What does a web page look like? | • can add content to their own web page<br>• preview what their web page looks like<br>• evaluate what their web page looks like on different devices and suggest/make edits |
| 5. Follow the breadcrumbs | Why are navigation paths important? | • explain what a navigation path is<br>• describe why navigation paths are useful |

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| | | • make multiple web pages and link them using hyperlinks |
| 6. Think before you link! | What are the implications of linking to content owned by other people? | • can explain the implication of linking to content owned by others<br>• create hyperlinks to link to other people's work<br>• evaluate the user experience of a website |

| **Spring 1 – Programming A – Variables in games** | | **Y6** |
|---|---|---|
| **Vocab:** variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Introducing variables | Esafety - How do I think online critically? (Digital Matters)<br><br>What is a 'variable'? | • identify examples of information that is variable<br>• explain that the way a variable changes can be defined<br>• identify that variables can hold numbers or letters |
| 2. Variables in programming | Why is a variable used in a program? | • identify a program variable as a placeholder in memory for a single value<br>• explain that a variable has a name and a value<br>• recognise that the value of a variable can be changed |
| 3. Improving a game | How do I improve a game by using variables? | • decide where in a program to change a variable<br>• make use of an event in a program to set a variable<br>• recognise that the value of a variable can be used by a program |
| 4. Becoming a games designer | How do I design a project that builds on a given example? | • choose the artwork for their project<br>• create algorithms for their project<br>• explain their design choices |
| 5. Design to code | How do I use my design to create a project? | • create the artwork for their project<br>• choose a name that identifies the role of a variable<br>• test the code that they have written |
| 6. Improving and sharing | How do I evaluate their project? | • identify ways that their game could be improved<br>• use variables to extend their game<br>• share their game with others |

| **Spring 2 – Data and information - Spreadsheets** | | **Y6** |
|---|---|---|
| **Vocab:** data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Collecting data | Esafety – What is copyright? (Digital Matters)<br><br>How do I create a data set in a spreadsheet? | • collect data<br>• enter data into a spreadsheet<br>• suggest how to structure their data |
| 2. Formatting a spreadsheet | How do I build a data set in a spreadsheet? | • apply an appropriate format to a cell<br>• choose an appropriate format for a cell<br>• explain what an item of data is |
| 3. What's the formula? | How can formulas be used to produce calculated data? | • construct a formula in a spreadsheet<br>• explain which data types can be used in calculations<br>• identify that changing inputs changes outputs |
| 4. Calculate and duplicate | How do I apply formulas to data? | • apply a formula to multiple cells by duplicating it<br>• calculate data using different operations |

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| | | • create a formula which includes a range of cells |
| 5. Event planning | How do I create a spreadsheet to plan an event? | • apply a formula to calculate the data they need to answer questions<br>• explain why data should be organised<br>• use a spreadsheet to answer questions |
| 6. Presenting data | How do I select suitable ways to present data? | • produce a chart<br>• suggest when to use a table or chart<br>• use a chart to show the answer to questions |

| **Summer 1 – Creating media – 3D Modelling** | | **Y6** |
|---|---|---|
| **Vocab:** TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.Introduction to 3D modelling | Esafety – What is cyberbullying? (Digital Matters)<br><br>How can I work in three dimensions on a computer? | • add 3D shapes to a project<br>• move 3D shapes relative to one another<br>• view 3D shapes from different perspectives |
| 2. Modifying 3D objects | How can digital 3D objects be modified? | • lift/lower 3D objects<br>• recolour a 3D object<br>• resize an object in three dimensions |
| 3. Make your own name badge | How can objects be combined in a 3D model? | • duplicate 3D objects<br>• group 3D objects<br>• rotate objects in three dimensions |
| 4. Making a desk tidy | How do I create a 3D model for a given purpose? | • accurately size 3D objects<br>• combine a number of 3D objects<br>• show that placeholders can create holes in 3D objects |
| 5. Planning a 3D model | How do I plan a 3D model? | • analyse a 3D model<br>• choose objects to use in a 3D model<br>• combine objects in a design |
| 6. Make your own 3D model | How do I create their own digital 3D model? | • construct a 3D model based on a design<br>• explain how their 3D model could be improved<br>• modify their 3D model to improve it |

| **Summer 2 – Programming B – Sensing movement** | | **Y6** |
|---|---|---|
| **Vocab:** Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, code | | |
| **TC Lesson** | **Learning Question** | **Pupils can...** |
| 1.The micro:bit | Esafety – What is my digital footprint? (Digital Matters)<br><br>How do I create a program to run on a controllable device? | • apply their knowledge of programming to a new environment<br>• test their program on an emulator<br>• transfer their program to a controllable device |

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| 2. Go with the flow | How does selection control the flow of a program? | • determine the flow of a program using selection<br>• identify examples of conditions in the real world<br>• use a variable in an if, then, else statement to select the flow of a program |
| 3. Sensing inputs | How do I update a variable with a user input? | • experiment with different physical inputs<br>• explain that checking a variable doesn't change its value<br>• use a condition to change a variable |
| 4. Finding your way | How do I use a conditional statement to compare a variable to a value? | • explain the importance of the order of conditions in else, if statements<br>• modify a program to achieve a different outcome<br>• use an operand (e.g. <>=) in an if, then statement |
| 5. Designing a step counter | How do I design a project that uses inputs and outputs on a controllable device? | • decide what variables to include in a project<br>• design the algorithm for their project<br>• design the program flow for their project |
| 6. Making a step counter | How do I develop a program to use inputs and outputs on a controllable device? | • create a program based on their design<br>• test their program against their design<br>• use a range of approaches to find and fix bugs |