Woolaston School Computing Curriculum Map

EYFS – Curriculum Map

Computational Thinking is at the heart of the computing curriculum and children will only be ready for this subject if we provide them with foundational experiences. The problem solving of Computational Thinking closely aligns with the Characteristics of Effective Learning. So by aligning EYFS provision to Computational Thinking, we use the same vocabulary as used by our colleagues in KS1, and ensure progression

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
The Characteristics of Effective Learning and Teaching	Creating and Thinking Critically Playing and Exploring Active Learning	Creating and Thinking Critically Playing and Exploring Active Learning	Creating and Thinking Critically Playing and Exploring Active Learning	Creating and Thinking Critically Playing and Exploring Active Learning	Creating and Thinking Critically Playing and Exploring Active Learning	Creating and Thinking Critically Playing and Exploring Active Learning
Barefoot Activities	Busy Bodies	Awesome Autumn	Winter Warmers	Springtime	Summer Fun	Boats Ahoy!
Concepts and Approaches	Algorithms Abstraction Decomposition Debugging Logic Patterns	Algorithms Collaborating Creating Decomposition Logic Pattern	Algorithms Collaborating Creating Decomposition Persevering Tinkering	Algorithms Abstraction Collaborating Creating Decomposition Persevering Tinkering	Algorithms Collaborating Debugging Decomposition, Logic Patterns Persevering Tinkering	Algorithms Abstraction Collaborating Creating Decomposition Logic Patterns Tinkering
Activities	Simple algorithms are created and adapted to form a routine of movements. Provides four activities that help children discover how bodies move and grow. Using the resources provided they explore and learn about parts of the body, growth and movement	Three Autumn themed activities which see the children explore patterns in Garlands Galore, create a leaf labyrinth and make Pumpkin Soup using computational thinking skills.	Snowmen scarves and patterns, creating igloos and bird feeders- all take centre stage in our three winter themed activities.	Three Spring themed activities see the children make a Rabbit run, create Junk scarecrows and explore sequencing whilst planting seeds.	Children explore their surroundings and get creative, take a journey and make a map, and discover seaside tangrams, in these three fun activities.	Takes children on a journey of discovery as they investigate boats. Four activities make up this set of resources. Includes different uses of boats, floating and sinking predictions, creating a good boat through exploring designs and role play

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Cross-reference of the EYFS Computational Thinking concepts to the Prime Areas of Learning

	Communication and Language		Personal, Social and Emotional Development			Physical Development	
	Listening, Attention and Understanding	Speaking	Self-Regulation	Managing Self	Building relationships	Gross Motor Skills	Fine Motor Skills
Tinkering						✓	✓
Creating						✓	✓
Collaboration	✓		✓	✓	✓		
Persevering	✓			✓			
Logic	✓	✓					
Pattern	✓	✓					
Abstraction	✓	✓					
Algorithms and decomposition	✓	✓					

Cross-reference of the Early Years Computational Thinking concepts to the Specific Areas of Learning

	Literacy			Mathematics		Understanding the world			Expressive arts and design	
	Comprehension	Word Reading	Writing	Number	Numerical Patterns	Past and Present	People, Culture and communities	The Natural World	Creating with Materials	Being imaginative and Expressive
Tinkering									✓	✓
Creating								✓	✓	✓
Collaboration						✓	✓		✓	
Persevering										
Logic	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Pattern	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Abstraction	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Algorithms and decomposition	✓	✓	✓	✓	✓	✓	✓	✓	✓	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

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	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill
Computing systems and networks – Technology around us	To identify technology	I can explain how these technology examples help us I can explain technology as something that helps us I can locate examples of technology in the classroom	To recognise the uses and features of information technology	- I can describe some uses of computers - I can identify examples of computers - I can identify that a computer is a part of IT	To identify the choices that I make when using IT	- I can explain that digital devices accept inputs - I can explain that digital devices produce outputs - I can follow a process	To describe how networks physically connect to other networks	- I can demonstrate how information is shared across the internet - I can describe the internet as a network of networks - I can discuss why a network needs protecting	To explain that computers can be connected together to form systems	- I can describe that a computer system features inputs, processes, and outputs - I can explain that computer systems communicate with other devices - I can explain that systems are built using a number of parts	To identify how to use a search engine	"- I can compare results from different search engines - I can complete a web search to find specific information - I can refine my search"
	To identify a computer and its main parts	I can name the main parts of a computer I can switch on and log into a computer I can use a mouse to click and drag	To identify the uses of information technology in the school	- I can identify examples of IT - I can identify that some IT can be used in more than one way - I can sort school IT by what it's used for	To use IT for different types of activities	- I can classify input and output devices - I can describe a simple process - I can design a digital device	To recognise how networked devices make up the internet	- I can describe networked devices and how they connect - I can explain that the internet is used to provide many services - I can recognise that the World Wide Web contains websites and web pages	To recognise the role of computer systems in our lives	- I can explain the benefits of a given computer system - I can identify tasks that are managed by computer systems - I can identify the human elements of a computer system	To describe how search engines select results	"- I can explain why we need tools to find things online - I can recognise the role of web crawlers in creating an index - I can relate a search term to the search engine's index"
	To use a mouse in different ways	I can click and drag to make objects on a screen I can use a mouse to create a picture I can use a mouse to open a program	To identify information technology beyond school	- I can find examples of information technology - I can sort IT by where it is found - I can talk about uses of information technology	To recognise how digital devices can change the way we work	- I can explain how I use digital devices for different activities - I can recognise similarities between using digital devices and non-digital tools - I can suggest differences between using digital devices and non-digital tools	To outline how websites can be shared via the World Wide Web (WWW)	- I can describe how to access websites on the WWW - I can describe where websites are stored when uploaded to the WWW - I can explain the types of media that can be shared on the WWW	To recognise how information is transferred over the internet	- I can explain that data is transferred over networks in packets - I can explain that networked digital devices have unique addresses - I can recognise that data is transferred using agreed methods	To explain how search results are ranked	"- I can explain that a search engine follows rules to rank relevant pages - I can explain that search results are ordered - I can suggest some of the criteria that a search engine checks to decide on the order of results"
	To use a keyboard to type on a computer	I can save my work to a file I can say what a keyboard is for I can type my name on a computer	To explain how information technology helps us	- I can identify the choices that I make when using IT - I can use IT for different types of activities I can demonstrate how IT devices work together	To explain how a computer network can be used to share information	- I can discuss why we need a network switch - I can explain how messages are passed through multiple connections - I can recognise different connections	To describe how content can be added and accessed on the World Wide Web (WWW)	- I can explain that internet services can be used to create content online - I can explain what media can be found on websites - I can recognise that I can add content to the WWW	To explain how sharing information online lets people in different places work together To explain how sharing information online lets people in different places work together	- I can explain that the internet allows different media to be shared - I can recognise that connected digital devices can allow us to access shared files stored online - I can send information over the internet in different ways	To recognise why the order of results is important, and to whom	"- I can describe some of the ways that search results can be influenced - I can explain how search engines make money - I can recognise some of the limitations of search engines"
	To use the keyboard to edit text	I can delete letters I can open my work from a file I can use the arrow keys to move the cursor	To explain how to use information technology safely	- I can recognise common types of technology - I can say why we use IT - I can list different uses of information technology	To explore how digital devices can be connected	- I can demonstrate how information can be passed between devices - I can explain the role of a switch, server, and wireless access point in a network - I can recognise that a computer network is made up of a number of devices	To recognise how the content of the WWW is created by people	- I can explain that there are rules to protect content - I can explain that websites and their content are created by people - I can suggest who owns the content on websites	To contribute to a shared project online	- I can compare working online with working offline - I can make thoughtful suggestions on my group's work - I can suggest strategies to ensure successful group work	To recognise how we communicate using technology	"- I can choose methods of communication to suit particular purposes - I can explain the different ways in which people communicate - I can identify that there are a variety of ways of communicating over the internet"
	To create rules for using technology responsibly	I can discuss how we benefit from these rules I can give examples of some of these rules I can identify rules to keep us safe and healthy when we are using technology in and beyond the home	To recognise that choices are made when using information technology	- I can say how rules can help keep me safe - I can talk about different rules for using IT - I can explain the need to use IT in different ways	To recognise the physical components of a network	- I can identify how devices in a network are connected together - I can identify networked devices around me - I can identify the benefits of computer networks	To evaluate the consequences of unreliable content	- I can explain that not everything on the World Wide Web is true - I can explain why I need to think carefully before I share or reshare content - I can explain why some information I find online may not be honest, accurate, or legal	To evaluate different ways of working together online	- I can explain how the internet enables effective collaboration - I can identify different ways of working together online - I can recognise that working together on the internet can be public or private	To evaluate different methods of online communication	"- I can compare different methods of communicating on the internet - I can decide when I should and should not share - I can explain that communication on the internet may not be private"

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill

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Creating Media 1

To describe what different freehand tools do	- I can draw lines on a screen and explain which tools I used - I can make marks on a screen and explain which tools I used - I can use the paint tools to draw a picture	To use a digital device to take a photograph	- I can explain what I did to capture a digital photo - I can recognise what devices can be used to take photographs - I can talk about how to take a photograph	To explain that animation is a sequence of drawings or photographs	I can create an effective flip book—style animation - I can draw a sequence of pictures - I can explain how an animation/flip book works	To identify that sound can be digitally recorded	- I can identify digital devices that can record sound and play it back - I can identify the inputs and outputs required to play audio or record sound - I can recognise the range of sounds that can be recorded	To identify that drawing tools can be used to produce different outcomes	- I can discuss how a vector drawing is different from paper-based drawings - I can identify the main drawing tools - I can recognise that vector drawings are made using shapes	To use a computer to create and manipulate three-dimensional (3D) digital objects	- I can discuss the similarities and differences between 2D and 3D shapes - I can explain why we might represent 3D objects on a computer - I can select, move, and delete a digital 3D shape
To use the shape tool and the line tools	- I can make marks with the square and line tools - I can use the shape and line tools effectively - I can use the shape and line tools to recreate the work of an artist	To make choices when taking a photograph	- I can explain the process of taking a good photograph - I can explain why a photo looks better in portrait or landscape format - I can take photos in both landscape and portrait format	To relate animated movement with a sequence of images	- I can create an effective stop-frame animation - I can explain why little changes are needed for each frame - I can predict what an animation will look like	To use a digital device to record sound	- I can discuss what other people include when recording sound for a podcast - I can suggest how to improve my recording - I can use a device to record audio and play back sound	To create a vector drawing by combining shapes	- I can explain that each element added to a vector drawing is an object - I can identify the shapes used to make a vector drawing - I can move, resize, and rotate objects I have duplicated	To compare working digitally with 2D and 3D graphics	- I can change the colour of a 3D object - I can identify how graphical objects can be modified - I can resize a 3D object
To make careful choices when painting a digital picture	- I can choose appropriate shapes - I can create a picture in the style of an artist - I can make appropriate colour choices	To describe what makes a good photograph	- I can discuss how to take a good photograph - I can identify what is wrong with a photograph - I can improve a photograph by retaking it	To plan an animation	- I can break down a story into settings, characters and events - I can create a storyboard - I can describe an animation that is achievable on screen	To explain that a digital recording is stored as a file	- I can discuss why it is useful to be able to save digital recordings - I can plan and write the content for a podcast - I can save a digital recording as a file	To use tools to achieve a desired effect	- I can explain how alignment grids and resize handles can be used to improve consistency - I can modify objects to create different effects - I can use the zoom tool to help me add detail to my drawings	To construct a digital 3D model of a physical object	- I can position 3D objects in relation to each other - I can rotate a 3D object - I can select and duplicate multiple 3D objects
To explain why I chose the tools I used	- I can choose appropriate paint tools and colours to recreate the work of an artist - I can say which tools were helpful and why - I know that different paint tools do different jobs	To decide how photographs can be improved	- I can experiment with different light sources - I can explain why a picture may be unclear - I can explore the effect that light has on a photo	To identify the need to work consistently and carefully	- I can evaluate the quality of my animation - I can review a sequence of frames to check my work - I can use onion skinning to help me make small changes between frames	To explain that audio can be changed through editing	- I can discuss ways in which audio recordings can be altered - I can edit sections of of an audio recording - I can open a digital recording from a file	To recognise that vector drawings consist of layers	- I can change the order of layers in a vector drawing - I can identify that each added object creates a new layer in the drawing - I can identify which objects are in the front layer or in the back layer of a drawing	To identify that physical objects can be broken down into a collection of 3D shapes	- I can create digital 3D objects of an appropriate size - I can group a digital 3D shape and a placeholder to create a hole in an object - I can identify the 3D shapes needed to create a model of a real-world object
To use a computer on my own to paint a picture	- I can change the colour and brush sizes - I can make dots of colour on the page - I can use dots of colour to create a picture in the style of an artist on my own	To use tools to change an image	- I can explain my choices - I can recognise that images can be changed - I can use a tool to achieve a desired effect	To review and improve an animation	- I can evaluate another learner's animation - I can explain ways to make my animation better - I can improve my animation based on feedback	To show that different types of audio can be combined and played together	- I can choose suitable sounds to include in a podcast - I can discuss sounds that other people combine - I can use editing tools to arrange sections of audio	To group objects to make them easier to work with	- I can copy part of a drawing by duplicating several objects - I can group to create a single object - I can reuse a group of objects to further develop my vector drawing	To design a digital model by combining 3D objects	- I can choose which 3D objects I need to construct my model - I can modify multiple 3D objects - I can plan my 3D model
To compare painting a picture on a computer and on paper	- I can explain that pictures can be made in lots of different ways - I can say whether I prefer painting using a computer or using paper - I can spot the differences between painting on a computer and on paper	To recognise that photos can be changed	- I can apply a range of photography skills to capture a photo - I can identify which photos are real and which have been changed - I can recognise which photos have been changed	To evaluate the impact of adding other media to an animation	- I can add other media to my animation - I can evaluate my final film - I can explain why I added other media to my animation	To evaluate editing choices made	- I can discuss the features of a digital recording I like - I can explain that digital recordings need to be exported to share them - I can suggest improvements to a digital recording	To evaluate my vector drawing	- I can apply what I have learned about vector drawings - I can suggest improvements to a vector drawing - I create alternatives to vector drawings	To develop and improve a digital 3D model	- I can decide how my model can be improved - I can evaluate my model against a given criterion - I can modify my model to improve it

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill	Knowledge	Skill

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To use a computer to write	- I can identify and find keys on a keyboard - I can open a word processor - I can recognise keys on a keyboard	To say how music can make us feel	- I can describe how music makes me feel, e.g. happy or sad - I can identify simple differences in pieces of music - I can listen with concentration to a range of music (links to the Music curriculum)	To recognise how text and images convey information	- I can explain the difference between text and images - I can identify the advantages and disadvantages of using text and images - I can recognise that text and images can communicate messages clearly	To explain that digital images can be changed	- I can explain the effect that editing can have on an image - I can explore how images can be changed in real life - I can identify changes that we can make to an image	To explain what makes a video effective	- I can compare features in different videos - I can explain that video is a visual media format - I can identify features of videos	To review an existing website and consider its structure	- I can discuss the different types of media used on websites - I can explore a website - I know that websites are written in HTML
To add and remove text on a computer	- I can enter text into a computer - I can use backspace to remove text - I can use letter, number, and space keys	To identify that there are patterns in music	- I can create a rhythm pattern - I can explain that music is created and played by humans - I can play an instrument following a rhythm pattern	To recognise that text and layout can be edited	- I can change font style, size, and colours for a given purpose - I can edit text - I can explain that text can be changed to communicate more clearly	To change the composition of an image	- I can change the composition of an image by selecting parts of it - I can consider why someone might want to change the composition of an image - I can explain what has changed in an edited image	To identify digital devices that can record video	- I can experiment with different camera angles - I can identify and find features on a digital video recording device - I can make use of a microphone	To plan the features of a web page	- I can draw a web page layout that suits my purpose - I can recognise the common features of a web page - I can suggest media to include on my page
To identify that the look of text can be changed on a computer	- I can explain what the keys that I have learnt about already do - I can identify the toolbar and use bold, italic, and underline - I can type capital letters	To show how music is made from a series of notes	- I can identify that music is a sequence of notes - I can refine my musical pattern on a computer - I can use a computer to create a musical pattern using three notes	To choose appropriate page settings	- I can create a template for a particular purpose - I can define the term 'page orientation' - I can recognise placeholders and say why they are important	To describe how images can be changed for different uses	- I can choose effects to make my image fit a scenario - I can explain why my choices fit a scenario - I can talk about changes made to images	To capture video using a range of techniques	- I can capture video using a range of filming techniques - I can review how effective my video is - I can suggest filming techniques for a given purpose	To consider the ownership and use of images (copyright)	- I can describe what is meant by the term ‘fair use’ - I can find copyright-free images - I can say why I should use copyright-free images
To make careful choices when changing text	- I can change the font - I can select all of the text by clicking and dragging - I can select a word by double-clicking	To show how music is made from a series of notes	- I can identify that music is a sequence of notes - I can refine my musical pattern on a computer - I can use a computer to create a musical pattern using three notes	To add content to a desktop publishing publication	- I can choose the best locations for my content - I can make changes to content after I’ve added it - I can paste text and images to create a magazine cover	To make good choices when selecting different tools	- I can choose appropriate tools to retouch an image - I can give examples of positive and negative effects that retouching can have on an image - I can identify how an image has been retouched	To create a storyboard	- I can create and save video content - I can decide which filming techniques I will use - I can outline the scenes of my video	To recognise the need to preview pages	- I can add content to my own web page - I can evaluate what my web page looks like on different devices and suggest/make edits - I can preview what my web page looks like
To explain why I used the tools that I chose	- I can decide if my changes have improved my writing - I can say what tool I used to change the text - I can use ‘undo’ to remove changes	To create music for a purpose	- I can describe an animal using sounds - I can explain my choices - I can save my work	To consider how different layouts can suit different purposes	- I can choose a suitable layout for a given purpose - I can identify different layouts - I can match a layout to a purpose	To recognise that not all images are real	- I can combine parts of images to create new images - I can sort images into ‘fake’ or ‘real’ and explain my choices - I can talk about fake images around me	To identify that video can be improved through reshooting and editing	- I can explain how to improve a video by reshooting and editing - I can select the correct tools to make edits to my video - I can store, retrieve, and export my recording to a computer	To outline the need for a navigation path	- I can describe why navigation paths are useful - I can explain what a navigation path is - I can make multiple web pages and link them using hyperlinks
To compare typing on a computer to writing on paper	- I can explain the differences between typing and writing - I can make changes to text on a computer - I can say why I prefer typing or writing	To review and refine our computer work	- I can explain how I made my work better - I can listen to music and describe how it makes me feel - I can reopen my work	To consider the benefits of desktop publishing	- I can compare work made on desktop publishing to work created by hand - I can identify the uses of desktop publishing in the real world - I can say why desktop publishing might be helpful	To evaluate how changes can improve an image	- I can compare the original image with my completed publication - I can consider the effect of adding other elements to my work - I can evaluate the impact of my publication on others through feedback	To consider the impact of the choices made when making and sharing a video	- I can evaluate my video and share my opinions - I can make edits to my video and improve the final outcome - I can recognise that my choices when making a video will impact on the quality of the final outcome	To recognise the implications of linking to content owned by other people	- I can create hyperlinks to link to other people's work - I can evaluate the user experience of a website - I can explain the implication of linking to content owned by others

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Knowledge	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**
Data and Information	To label objects	- I can describe objects using labels - I can identify the label for a group of objects - I can match objects to groups	To recognise that we can count and compare objects using tally charts	- I can compare totals in a tally chart - I can record data in a tally chart - I can represent a tally count as a total	To create questions with yes/no answers	- I can create two groups of objects separated by one attribute - I can investigate questions with yes/no answers - I can make up a yes/no question about a collection of objects	To explain that data gathered over time can be used to answer questions	- I can choose a data set to answer a given question - I can identify data that can be gathered over time - I can suggest questions that can be answered using a given data set	To use a form to record information	- I can create multiple questions about the same field - I can explain how information can be recorded - I can order, sort, and group my data cards	To identify questions which can be answered using data	- I can answer questions from an existing data set - I can ask simple relevant questions which can be answered using data - I can explain the relevance of data headings

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	To identify that objects can be counted	- I can count a group of objects - I can count objects - I can group objects	To recognise that objects can be represented as pictures	- I can enter data onto a computer - I can use a computer to view data in a different format - I can use pictograms to answer simple questions about objects	To identify the object attributes needed to collect relevant data	- I can arrange objects into a tree structure - I can create a group of objects within an existing group - I can select an attribute to separate objects into groups	To use a digital device to collect data automatically	- I can explain that sensors are input devices - I can identify that data from sensors can be recorded - I can use data from a sensor to answer a given question	To compare paper and computer-based databases	- I can choose which field to sort data by to answer a given question - I can explain what a 'field' and a 'record' is in a database - I can navigate a flat-file database to compare different views of information	To explain that objects can be described using data	- I can apply an appropriate number format to a cell - I can build a data set in a spreadsheet application - I can explain what an item of data is
	To describe objects in different ways	- I can describe an object - I can describe a property of an object - I can find objects with similar properties	To create a pictogram	- I can explain what the pictogram shows - I can organise data in a tally chart - I can use a tally chart to create a pictogram	To create a branching database	- I can group objects using my own yes/no questions - I can prove my branching database works - I can select objects to arrange in a branching database	To explain that a data logger collects 'data points' from sensors over time	- I can identify a suitable place to collect data - I can identify the intervals used to collect data - I can talk about the data that I have captured	To outline how grouping and then sorting data allows us to answer questions	- I can combine grouping and sorting to answer more specific questions - I can explain how information can be grouped - I can group information to answer questions	To explain that formulas can be used to produce calculated data	- I can construct a formula in a spreadsheet - I can explain the relevance of a cell's data type - I can identify that changing inputs changes outputs
	To count objects with the same properties	- I can count how many objects share a property - I can group objects in more than one way - I can group similar objects	To select objects by attribute and make comparisons	- I can answer 'more than'/'less than' and 'most/least' questions about an attribute - I can create a pictogram to arrange objects by an attribute - I can tally objects using a common attribute	To explain why it is helpful for a database to be well structured	- I can compare two branching database structures - I can create yes/no questions using given attributes - I can explain that questions need to be ordered carefully to split objects into similarly sized groups	To use data collected over a long duration to find information	- I can import a data set - I can use a computer program to sort data - I can use a computer to view data in different ways	To explain that tools can be used to select specific data	- I can choose multiple criteria to answer a given question - I can choose which field and value are required to answer a given question - I can outline how 'AND' and 'OR' can be used to refine data selection	To apply formulas to data, including duplicating	- I can apply a formula to multiple cells by duplicating it - I can create a formula which includes a range of cells - I can recognise that data can be calculated using different operations
	To compare groups of objects	- I can choose how to group objects - I can describe groups of objects - I can record how many objects are in a group	To recognise that people can be described by attributes	- I can choose a suitable attribute to compare people - I can collect the data I need - I can create a pictogram and draw conclusions from it	To identify objects using a branching database	- I can create questions and apply them to a tree structure - I can select a theme and choose a variety of objects - I can use my branching database to answer questions	To identify the data needed to answer questions	- I can plan how to collect data using a data logger - I can propose a question that can be answered using logged data - I can use a data logger to collect data	To explain that computer programs can be used to compare data visually	- I can explain the benefits of using a computer to create graphs - I can refine a chart by selecting a particular filter - I can select an appropriate chart to visually compare data	To create a spreadsheet to plan an event	- I can apply a formula to calculate the data I need to answer questions - I can explain why data should be organised - I can use a spreadsheet to answer questions
	To answer questions about groups of objects	- I can compare groups of objects - I can decide how to group objects to answer a question - I can record and share what I have found	To explain that we can present information using a computer	- I can give simple examples of why information should not be shared - I can share what I have found out using a computer - I can use a computer program to present information in different ways	To compare the information shown in a pictogram with a branching database	- I can compare two ways of presenting information - I can explain what a branching database tells me - I can explain what a pictogram tells me	To use collected data to answer questions	- I can draw conclusions from the data that I have collected - I can explain the benefits of using a data logger - I can interpret data that has been collected using a data logger	To apply my knowledge of a database to ask and answer real-world questions	- I can ask questions that will need more than one field to answer - I can present my findings to a group - I can refine a search in a real-world context	To choose suitable ways to present data	- I can produce a graph - I can suggest when to use a table or graph - I can use a graph to show the answer to questions

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
Programming	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**
	To explain what a given command will do	- I can match a command to an outcome - I can predict the outcome of a command on a device - I can run a command on a device	To describe a series of instructions as a sequence	- I can choose a series of words that can be enacted as a sequence - I can follow instructions given by someone else - I can give clear and unambiguous instructions	To explore a new programming environment	- I can explain that objects in Scratch have attributes (linked to) - I can identify the objects in a Scratch project (sprites, backdrops) - I can recognise that commands in Scratch are represented as blocks	To identify that accuracy in programming is important	- I can create a code snippet for a given purpose - I can explain the effect of changing a value of a command - I can program a computer by typing commands	To control a simple circuit connected to a computer	- I can create a simple circuit and connect it to a microcontroller - I can explain what an infinite loop does - I can program a microcontroller to make an LED switch on	To define a 'variable' as something that is changeable	- I can explain that the way that a variable changes can be defined - I can identify examples of information that is variable - I can identify that variables can hold numbers or letters
	To act out a given word	- I can follow an instruction - I can give directions - I can recall words that can be acted out	To explain what happens when we change the order of instructions	- I can create different algorithms for a range of sequences (using the same commands) - I can show the difference in outcomes between two sequences that consist of the same commands - I can use an algorithm to program a sequence on a floor robot	To identify that commands have an outcome	- I can choose a word which describes an on-screen action for my plan - I can create a program following a design - I can identify that each sprite is controlled by the commands I choose	To create a program in a text-based language	- I can test my algorithm in a text-based language - I can use a template to create a design for my program - I can write an algorithm to produce a given outcome	To write a program that includes count-controlled loops	- I can connect more than one output component to a microcontroller - I can design sequences that use count-controlled loops - I can use a count-controlled loop to control outputs	To explain why a variable is used in a program	- I can explain that a variable has a name and a value - I can identify a program variable as a placeholder in memory for a single value - I can recognise that the

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											value of a variable can be changed
To combine forwards and backwards commands to make a sequence	- I can compare forwards and backwards movements - I can predict the outcome of a sequence involving forwards and backwards commands - I can start a sequence from the same place	To use logical reasoning to predict the outcome of a program (series of commands)	- I can compare my prediction to the program outcome - I can follow a sequence - I can predict the outcome of a sequence	To explain that a program has a start	- I can create a sequence of connected commands - I can explain that the objects in my project will respond exactly to the code - I can start a program in different ways	To explain what 'repeat' means	- I can identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome	To explain that a loop can stop when a condition is met	- I can design a conditional loop - I can explain that a condition is either true or - I can program a microcontroller to respond to an input	To choose how to improve a game by using variables	- I can decide where in a program to change a variable - I can make use of an event in a program to set a variable - I can recognise that the value of a variable can be used by a program
To combine four direction commands to make sequences	- I can compare left and right turns - I can experiment with turn and move commands to move a robot - I can predict the outcome of a sequence involving up to four commands	To explain that programming projects can have code and artwork	- I can explain the choices I made for my mat design - I can identify different routes around my mat - I can test my mat to make sure that it is usable	To recognise that a sequence of commands can have an order	- I can combine sound commands - I can explain what a sequence is - I can order notes into a sequence	To modify a count-controlled loop to produce a given outcome	- I can choose which values to change in a loop - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop	To explain that a loop can be used to repeatedly check whether a condition has been met	- I can explain that a condition being met can start an action - I can identify a condition and an action in my project - I can use selection (an 'if…then…' statement) to direct the flow of a program	To design a project that builds on a given example	- I can choose the artwork for my project - I can create algorithms for my project - I can explain my design choices
To plan a simple program	- I can choose the order of commands in a sequence - I can debug my program - I can explain what my program should do	To design an algorithm	- I can create an algorithm to meet my goal - I can explain what my algorithm should achieve - I can use my algorithm to create a program	To change the appearance of my project	- I can build a sequence of commands - I can decide the actions for each sprite in a program - I can make design choices for my artwork	To decompose a task into small steps	- I can explain that a computer can repeatedly call a procedure - I can identify 'chunks' of actions in the real world - I can use a procedure in a program	To design a physical project that includes selection	- I can create a detailed drawing of my project - I can describe what my project will do - I can identify a real-world example of a condition starting an action	To use my design to create a project	- I can choose a name that identifies the role of a variable - I can create the artwork for my project - I can test the code that I have written
To find more than one solution to a problem	- I can identify several possible solutions - I can plan two programs - I can use two different programs to get to the same place	To create and debug a program that I have written	- I can plan algorithms for different parts of a task - I can put together the different parts of my program - I can test and debug each part of the program	To create a project from a task description	- I can identify and name the objects I will need for a project - I can implement my algorithm as code - I can relate a task description to a design	To create a program that uses count-controlled loops to produce a given outcome	- I can design a program that includes count-controlled loops - I can develop my program by debugging it - I can make use of my design to write a program	To create a program that controls a physical computing project	- I can test and debug my project - I can use selection to produce an intended outcome - I can write an algorithm that describes what my model will do	To evaluate my project	- I can extend my game further using more variables - I can identify ways that my game could be improved - I can share my game with others

Programming 2

	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Knowledge	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**	**Knowledge**	**Skill**
	To choose a command for a given purpose	- I can compare different programming tools - I can find which commands to move a sprite - I can use commands to move a sprite	To explain that a sequence of commands has a start	- I can identify that a program needs to be started - I can identify the start of a sequence - I can show how to run my program	To explain how a sprite moves in an existing project	- I can choose which keys to use for actions and explain my choices - I can explain the relationship between an event and an action - I can identify a way to improve a program	To develop the use of count-controlled loops in a different programming environment	- I can list an everyday task as a set of instructions including repetition - I can modify a snippet of code to create a given outcome - I can predict the outcome of a snippet of code	To explain how selection is used in computer programs	- I can identify conditions in a program - I can modify a condition in a program - I can recall how conditions are used in selection	To create a program to run on a controllable device	- I can apply my knowledge of programming to a new environment - I can test my program on an emulator - I can transfer my program to a controllable device
	To show that a series of commands can be joined together	- I can run my program - I can use a Start block in a program - I can use more than one block by joining them together	To explain that a sequence of commands has an outcome	- I can change the outcome of a sequence of commands - I can match two sequences with the same outcome - I can predict the outcome of a sequence of commands	To create a program to move a sprite in four directions	- I can choose a character for my project - I can choose a suitable size for a character in a maze - I can program movement	To explain that in programming there are infinite loops and count controlled loops	- I can choose when to use a count-controlled and an infinite loop - I can modify loops to produce a given outcome - I can recognise that some programming languages enable more than one process to be run at once	To relate that a conditional statement connects a condition to an outcome	- I can create a program with different outcomes using selection - I can identify the condition and outcomes in an 'if... then… else...' statement - I can use selection in an infinite loop to check a condition	To explain that selection can control the flow of a program	- I can determine the flow of a program using selection - I can identify examples of conditions in the real world - I can use a variable in an if, then, else statement to select the flow of a program

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	To identify the effect of changing a value	- I can change the value - I can find blocks that have numbers - I can say what happens when I change a value	To create a program using a given design	- I can build the sequences of blocks I need - I can decide which blocks to use to meet the design - I can work out the actions of a sprite in an algorithm	To adapt a program to a new context	- I can choose blocks to set up my program - I can consider the real world when making design choices - I can use a programming extension	To develop a design that includes two or more loops which run at the same time	- I can choose which action will be repeated for each object - I can evaluate the effectiveness of the repeated sequences used in my program - I can explain what the outcome of the repeated action should be	To explain how selection directs the flow of a program	- I can design the flow of a program which contains 'if… then… else…' - I can explain that program flow can branch according to a condition - I can show that a condition can direct program flow in one of two ways	To update a variable with a user input	- I can experiment with different physical inputs - I can explain that if you read a variable, the value remains - I can use a condition to change a variable
	To explain that each sprite has its own instructions	- I can add blocks to each of my sprites - I can delete a sprite - I can show that a project can include more than one sprite	To change a given design	- I can choose backgrounds for the design - I can choose characters for the design - I can create a program based on the new design	To develop my program by adding features	- I can build more sequences of commands to make my design work - I can choose suitable keys to turn on additional features - I can identify additional features (from a given set of blocks)	To modify an infinite loop in a given program	- I can explain the effect of my changes - I can identify which parts of a loop can be changed - I can re-use existing code snippets on new sprites	To design a program which uses selection	- I can identify the outcome of user input in an algorithm - I can outline a given task - I can use a design format to outline my project	To use an conditional statement to compare a variable to a value	- I can explain the importance of the order of conditions in else, if statements - I can modify a program to achieve a different outcome - I can use an operand (e.g. <>=) in an if, then statement
	To design the parts of a project	- I can choose appropriate artwork for my project - I can create an algorithm for each sprite - I can decide how each sprite will move	To create a program using my own design	- I can build sequences of blocks to match my design - I can choose the images for my own design - I can create an algorithm	To identify and fix bugs in a program	- I can match a piece of code to an outcome - I can modify a program using a design - I can test a program against a given design	To design a project that includes repetition	- I can develop my own design explaining what my project will do - I can evaluate the use of repetition in a project - I can select key parts of a given project to use in my own design	To create a program which uses selection	- I can implement my algorithm to create the first section of my program - I can share my program with others - I can test my program	To design a project that uses inputs and outputs on a controllable device	- I can decide what variables to include in a project - I can design the algorithm for my project - I can design the program flow for my project
	To use my algorithm to create a program	- I can add programming blocks based on my algorithm - I can test the programs I have created - I can use sprites that match my design	To decide how my project can be improved	- I can compare my project to my design - I can debug my program - I can improve my project by adding features	To design and create a maze-based challenge	- I can evaluate my project - I can implement my design - I can make design choices and justify them	To create a project that includes repetition	- I can build a program that follows my design - I can evaluate the steps I followed when building my project - I can refine the algorithm in my design	To evaluate my program	- I can extend my program further - I can identify the setup code I need in my program - I can identify ways the program could be improved	To develop a program to use inputs and outputs on a controllable device	- I can create a program based on my design - I can test my program against my design - I can use a range of approaches to find and fix bugs