

Route Map - September 2022 - 2023

SUBJECT	Computing							
Year group		EYFS	Year1/2 (22-23)	Year 1/2 (23-24)	Year 3/4 (22-23)	Year 3/4 (23-24)	Year 5	Year 6
Autumn 1	Topic focus	Basic skills	Technology Around Us	I.T. Around Us	Connecting Computers	The Internet	Sharing Information	Communication
	Key knowledge:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	Classify what is and what is not technology. To know how technology helps us in different ways. To be able to log on and off a computer. To know the main/key parts of a computer or laptop. I can save my work to a file. I can open my work from a file.	To recognise the uses and features of information technology To identify the uses of information technology in the school To identify information technology beyond school To explain how information technology helps us To explain how to use information technology safely To recognise that choices are made when using information technology	To explain how digital devices function To identify input and output devices To recognise how digital devices can change the way we work To explain how a computer network can be used to share information To explore how digital devices can be connected To recognise the physical components of a network	To describe how networks physically connect to other networks To recognise how networked devices make up the internet To outline how websites can be shared via the World Wide Web (WWW) To describe how content can be added and accessed on the World Wide Web (WWW) To recognise how the content of the WWW is created by people To evaluate the consequences of unreliable content	To explain that computers can be connected together to form systems To recognise the role of computer systems in our lives To recognise how information is transferred over the internet To explain how sharing information online lets people in different places work together To contribute to a shared project online To evaluate different ways of working together online	To identify how to use a search engine To describe how search engines select results To explain how search results are ranked To recognise why the order of results is important, and to whom To recognise how we communicate using technology To evaluate different methods of online communication
	Key skills:	Name computer components Basic mouse & Basic vocabulary Simple inputs/outputs Turn hardware on/off/logon/log off Finding & opening appropriate programs	To be able to turn a computer on and off. To use a keyboard to type on a computer. To use a keyboard; typing, arrows, delete. To use a mouse in different ways; open a program, click and drag, to make a picture.	I can identify examples of computers I can identify that a computer is a part of IT I can identify examples of IT I can sort school IT by what it's used for I can sort IT by where it is found I can demonstrate how IT devices work together I can say why we use IT I can list different uses of information technology I can say how rules can help keep me safe I can 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 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	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 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 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 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 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 I can explain how the internet enables effective collaboration I can identify different ways	I can compare results from different search engines I can complete a web search to find specific information I can refine my search 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 I can choose methods of communication to suit particular purposes I can explain the different ways in which people communicate

						I can explain the types of media that can be shared on the WWW	of working together online I can recognise that working together on the internet can be public or private	I can identify that there are a variety of ways of communicating over the internet 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
	Key resource available:	PC/chromebooks Range of software inc: ed city, Busythings, paint package, MS Office	Computer or laptop access Keyboard and a mouse	Camera, printer, computer, chromebooks, (examples of IT)	Camera to take photos Resources as on lesson plans – the children need <i>no computer access</i>	Computer access; PC, laptop or Chromebook Computer must have internet access.	Computer access; PC, laptop or Chromebook Computer must have internet access.	Computer access; PC, laptop or Chromebook. Access to Scratch.

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Autumn 2	Topic focus	Junior Explorers	Digital Painting	Digital Photography	Creating Animation	Audio Editing	Video editing	Web page creating
	Key knowledge:	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs	To make careful choices when painting digitally; <i>appropriate shapes & appropriate colour choices.</i> To explain why I chose the tools I used. To compare painting a picture on a computer and on paper To describe what different freehand tools do.	To use a digital device to take a photograph To make choices when taking a photograph To describe what makes a good photograph To decide how photographs can be improved To use tools to change an image To recognise that photos can be changed	To explain that animation is a sequence of drawings or photographs To relate animated movement with a sequence of images To plan an animation To identify the need to work consistently and carefully To review and improve an animation To evaluate the impact of adding other media to an animation	To identify that sound can be digitally recorded To use a digital device to record sound To explain that a digital recording is stored as a file To explain that audio can be changed through editing To show that different types of audio can be combined and played together To evaluate editing choices made	To explain what makes a video effective To identify digital devices that can record video To capture video using a range of techniques To create a storyboard To identify that video can be improved through reshooting and editing To consider the impact of the choices made when making and sharing a video	To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people
	Key skills:	-Input keys & function -Care & handling of beebot -Sequencing instructions Manipulating different software	To use a computer on my own to paint a picture. To be able to use different freehand tools. To use the shape tool and the line tools. To create a picture in the style of an artist.	I can recognise what devices can be used to take photographs I can take photos in both landscape and portrait format I can explain why a photo looks better in portrait or landscape format	I can create an effective flip book—style animation I can draw a sequence of pictures I can create an effective stop-frame animation I can explain why little changes are needed for each frame	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 I can discuss what other people	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 I can capture video using a range of filming techniques	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 I can describe what is meant by the term ‘fair use’

				I can improve a photograph by retaking it I can experiment with different light sources I can use a tool to achieve a desired effect I can apply a range of photography skills to capture a photo	I can predict what an animation will look like I can break down a story into settings, characters and events I can create a storyboard	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 I can plan and write the content for a podcast I can save a digital recording as a file I can choose suitable sounds to include in a podcast I can use editing tools to arrange sections of audio	I can review how effective my video is I can suggest filming techniques for a given purpose I can create and save video content I can decide which filming techniques I will use I can outline the scenes of my video	I can find copyright-free images I can say why I should use copyright-free images 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
	Key resource available:	Beebots & mats	Microsoft Paint OR Online access to www.paintz.app	Camera, light source	Plan outlines the use of a tablet/ipad Stop Motion Studio can be used on Android devices	Computers, laptops or Chromebooks. Computers with microphones and headphones. Access to; www.audacityteam.org	Devices that can record video. Windows 10 Video Editor (needs to be downloaded) to edit children's videos.	Computers, laptops or Chromebooks with internet access. Access to websites.

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Spring 1	Topic focus	Continuation of basic skills	Digital Writing	Robot algorithms	Sequence in music	Repetition in shapes	Selection in physical computing	Variables in games
	Key knowledge:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	I can explain what the keys that I have already learnt about do. To explain why I used the tools that I chose. I can say what tool I used to change the text.	To describe a series of instructions as a sequence To explain what happens when we change the order of instructions To use logical reasoning to predict the outcome of a program (series of	To explore a new programming environment To identify that commands have an outcome To explain that a program has a start	To identify that accuracy in programming is important To create a program in a text-based language To explain what 'repeat' means To modify a count-controlled loop to produce a given outcome	To control a simple circuit connected to a computer To write a program that includes count-controlled loops To explain that a loop can stop when a condition is met To explain that a loop can be used to repeatedly check whether a condition	To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variable To design a project that

			I can decide if my changes have improved my writing. I can use undo to remove changes. To compare typing on a computer to writing on paper.	commands) To explain that programming projects can have code and artwork To design an algorithm To create and debug a program that I have written	To recognise that a sequence of commands can have an order To change the appearance of my project To create a project from a task description	To deconstruct a task into small steps To create a program that uses count-controlled loops to produce a given outcome	has been met To design a physical project that includes selection To create a program that controls a physical computing project	builds on a given example To use my design to create a project To evaluate my project
	Key skills:	Name computer components Basic mouse & keyboard skills & Basic vocabulary Log on/off, shut down, back space, space bar, return, right click, cursor, double click	I can recognise keys on a keyboard. I can identify and find keys on a keyboard. I can use letter, number, and space keys. I can use backspace to remove text. I can type capital letters. I can identify the toolbar and use bold, italic, and underline. I can select all of the text by clicking and dragging	I can follow instructions given by someone else I can give clear and unambiguous 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 I can test my mat to make sure that it is usable I can create an algorithm to meet my goal I can use my algorithm to create a program I can test and debug each part of the program	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 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 I can combine sound commands I can explain what a sequence is I can order notes into a sequence	I can create a code snippet for a given purpose I can program a computer by typing commands 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 I can use a count-controlled loop 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	I can create a simple circuit and connect it to a microcontroller I can program a microcontroller to make an LED switch on 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 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	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 I can choose the artwork for my project I can create algorithms for my project I can explain my design choices 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
	Key resource available:	PC/chromebooks Range of software inc: ed city, Busythings, paint package, MSOffice	A computer, keyboard Microsoft Word Word processor	Beebots	Computers, laptops or Chromebooks with a keyboard. Internet access. Access to Scratch.	Computer, laptop or Chromebook access. A version of Logo; www.turtleacademy.com/playground OR www.fmslogo.sourceforge.net	Crumble Software; download from www.redfernelectronics.co.uk/crumblesoftware	Computers, laptops or Chromebooks with a keyboard. Internet access. Access to Scratch.

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Year group		EYFS	Year1/2 (22-23)	Year 1/2 (23-24)	Year 3/4 (22-23)	Year 3/4 (23-24)	Year 5	Year 6
Spring 2	Topic focus	Continuation of basic skills	Grouping Data	Pictograms	Branching Databases	Data Logging	Flat-file Databases	Spread sheets
	Key knowledge:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	To describe objects in different ways, considering their properties, similarities and differences. To compare groups of objects. To answer questions about groups of objects.	To recognise that we can count and compare objects using tally charts To recognise that objects can be represented as pictures To create a pictogram To select objects by attribute and make comparisons To recognise that people can be described by attributes To explain that we can present information using a computer	To create questions with yes/no answers To identify the object attributes needed to collect relevant data To create a branching database To explain why it is helpful for a database to be well structured To identify objects using a branching database To compare the information shown in a pictogram with a branching database	To explain that data gathered over time can be used to answer questions To use a digital device to collect data automatically To explain that a data logger collects 'data points' from sensors over time To use data collected over a long duration to find information To identify the data needed to answer questions To use collected data to answer questions	To use a form to record information To compare paper and computer-based databases To outline how grouping and then sorting data allows us to answer questions To explain that tools can be used to select specific data To explain that computer programs can be used to compare data visually To apply my knowledge of a database to ask and answer real-world questions	To identify questions which can be answered using data To explain that objects can be described using data To explain that formulas can be used to produce calculated data To apply formulas to data, including duplicating To create a spreadsheet to plan an event To choose suitable ways to present data
	Key skills:	keyboard skills & Basic vocabulary: shift, caps lock, "creating" capitals and other keyboard functions with shift key, space bar. Simple word processing	To label objects. To identify that objects can be counted. To count objects with the same properties.	I can record data in a tally chart I can represent a tally count as a total 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 I can use a tally chart to create a pictogram I can create a pictogram to arrange objects by an attribute I can collect the data I need I can use a computer programme to represent data in different ways.	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 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 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 I can create questions and apply them to a tree structure I can select a theme and choose a variety of objects	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 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 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 I can draw conclusions from the data that I have collected I can interpret data that has been collected using a data logger	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 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 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	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 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 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

					I can use my branching database to answer questions			
	Key resource available:	PC/chromebooks Range of software inc: ed city, Busythings, paint package, MSOffice	Computers with access to a word processor. Microsoft Word. Computer keyboards.	https://www.j2e.com/jit5#pictogram	Physical resources as per plans. Access to; www.j2e.com		Access to; www.j2e.com www.expedia.co.uk/flights	Access; Microsoft Excel or Google Sheets

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Year group		EYFS	Year1/2 (22-23)	Year 1/2 (23-24)	Year 3/4 (22-23)	Year 3/4 (23-24)	Year 5	Year 6
Summer 1	Topic focus	Application of keyboard & mouse skills	Digital Writing	Making music	Events and actions	Photo editing	Vector drawing	3D modelling
	Key knowledge:	Use technology purposefully to create, organise, store, manipulate and retrieve digital content Recognise common uses of information technology beyond school	To use a computer to write. To add and remove text on a computer. To identify that the look of text can be changed on a computer. To make careful choices when changing texts. To explain why I used the tools that I chose. To compare typing on a computer to writing on paper.	To say how music can make us feel To identify that there are patterns in music To show how music is made from a series of notes To show how music is made from a series of notes To create music for a purpose To review and refine our computer work	To explain how a sprite moves in an existing project To create a program to move a sprite in four directions To adapt a program to a new context To develop my program by adding features To identify and fix bugs in a program To design and create a maze-based challenge	To explain that digital images can be changed To change the composition of an image To describe how images can be changed for different uses To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image	To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapes To use tools to achieve a desired effect To recognise that vector drawings consist of layers To group objects to make them easier to work with To evaluate my vector drawing	To use a computer to create and manipulate three-dimensional (3D) digital objects To compare working digitally with 2D and 3D graphics To construct a digital 3D model of a physical object To identify that physical objects can be broken down into a collection of 3D shapes To design a digital model by combining 3D objects To develop and improve a digital 3D model
	Key skills:	Following onscreen & verbal instructions to navigate specified programmes Move cursor with a program Graphic representations e.g.maps	To use a keyboard to enter text and numbers into a computer (including backspace, spacebar and enter.) To open word processor. I can type capital letters. I can use the tool bar to make text bold, italic, underlined and change the font and letter size. I can type capital letters. I can use the undo tool.	I can identify simple differences in pieces of music I can listen with concentration to a range of music (links to the Music curriculum) I can play an instrument following a rhythm pattern I can create a rhythm pattern I can refine my musical pattern on a computer I can use a computer to create a musical pattern using three notes I can save my work I can reopen my work	I can choose which keys to use for actions and explain my choices I can choose a character for my project I can choose a suitable size for a character in a maze I can program movement 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 I can build more sequences	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 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 I can compare the original image with my completed publication	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 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 I can copy part of a drawing by duplicating several objects	I can change the colour of a 3D object I can identify how graphical objects can be modified I can resize a 3D 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 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

					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)	I can consider the effect of adding other elements to my work I can evaluate the impact of my publication on others through feedback	I can group to create a single object I can reuse a group of objects to further develop my vector drawing	I can identify the 3D shapes needed to create a model of a real-world object
	Key resource available:	PC/chromebooks Range of software inc: ed city, Busythings, paint package, MSOffice	Computer, Keyboard, Word, Mouse, Monitor.	https://musiclab.chromeexperiments.com/		Internet to access; www.getpaint.net/doc/latest/index.html . www.paint.net	Internet to access; Google Drawings application A vector drawing programme; e.g. Vectr	Internet access for Tinkercad https://www.tinkercad.com) Teachers can make a class account.

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Summer 2	Topic focus	Appling skills to support wider curriculum	Introduction to Animation	An Introduction to Quizzes	Desktop publishing	Repetition in games	Selection in Quizzes	Sensing
	Key knowledge:	A- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the behaviour of simple programs B- Use technology purposefully to create, organise, store, manipulate and retrieve digital content	To choose a command for a given purpose. To show that a series of commands can be joined together. To identify the effect of changing a value To explain that each sprite has its own instructions To design the parts of a project To use my algorithm to create a program	To explain that a sequence of commands has a start To explain that a sequence of commands has an outcome To create a program using a given design To change a given design To create a program using my own design To decide how my project can be improved	To recognise how text and images convey information To recognise that text and layout can be edited To choose appropriate page settings To add content to a desktop publishing publication To consider how different layouts can suit different purposes To consider the benefits of desktop publishing	To develop the use of count-controlled loops in a different programming environment To explain that in programming there are infinite loops and count controlled loops To develop a design that includes two or more loops which run at the same time To modify an infinite loop in a given program To design a project that includes repetition To create a project that includes repetition	To explain how selection is used in computer programs To relate that a conditional statement connects a condition to an outcome To explain how selection directs the flow of a program To design a program which uses selection To create a program which uses selection To evaluate my program	To create a program to run on a controllable device To explain that selection can control the flow of a program To update a variable with a user input To use an conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device
	Key skills:	A-Input keys & function: directional keys Language: forwards,	I can use commands to move a sprite I can run my program	I can show how to run my program I can change the outcome of a sequence of commands	I can change font style, size, and colours for a given purpose I can edit text	I can choose which action will be repeated for each object I can evaluate the effectiveness of the repeated	I can create a program with different outcomes using selection I can identify the condition	I can apply my knowledge of programming to a new environment I can test my program on an

		backwards, left, right, turn B- creating graphical representations Key vocab. Painting tools, fill, line, resize	I can use a Start block in a program I can use more than one block by joining them together I can change the value I can add blocks to each of my sprites I can delete a sprite I can create an algorithm for each sprite I can add programming blocks based on my algorithm I can test the programs I have created	I can match two sequences with the same outcome I can predict the outcome of a sequence of commands I can build the sequences of blocks I need I can work out the actions of a sprite in an algorithm I can choose backgrounds for the design I can create a program based on the new design	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 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	sequences used in my program I can explain what the outcome of the repeated action should be 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 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	and outcomes in an 'if... then... else...' statement I can use selection in an infinite loop to check a condition 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 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	emulator I can transfer my program to a controllable device 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 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 I can use a range of strategies to help fix bugs.
	Key resource available:	Busy things – path of peril 2paint a picture	Scratch Junior	Scratch Junior	Internet to access <i>Adobe Spark</i>. All learners will need accounts.	Scratch Junior	Scratch Junior	micro:bit (Hardware) Make code.