

Knowing More. Remembering More. Applying More! Assessment in COMPUTING (Year 3)

Teachers to assess how well children have learned the required knowledge at the end of each term.

Working Towards (WTS) Expected (EXS) Greater Depth (GDS)

	Autumn Term 1- Networks connecting computers	Autumn Term 2 – Programming A- Sequences	Spring Term 1 – Programming B- Events and actions	Spring Term 2-Animation	Summer Term 1– Branching Database	Summer Term 2 –Desktop publishing
Substantive Key Knowledge	<ul style="list-style-type: none"> I understand that computers need input and output devices. I can identify how devices in a network are connected to one another. I know the benefits of computer networks. 	<ul style="list-style-type: none"> I can identify that a program includes sequences of commands. I can explain that the order of commands can affect a program's output. I can identify that different sequences can achieve different outputs, or the same output. 	<ul style="list-style-type: none"> I can explain what a sequence is, and understand that it is a process. I know that a program includes sequences of commands. I can explain that the order of commands / sequences can affect a program's output. 	<ul style="list-style-type: none"> I understand and can explain that an animation is made up of a sequence of images. I understand why smaller movements create smoother animation, and the need for consistency in working. I can recognise and explain the impact of adding other media (sound effects/music) to animations. 	<ul style="list-style-type: none"> I can explain that a branching database is an identification tool and explain how it works. I can identify attributes that you can ask yes/no questions about. I can suggest real-world applications for branching databases. 	<ul style="list-style-type: none"> I can consider how different layouts can suit different purposes (landscape vs portrait). I understand what placeholders are and how they can help to structure a document. I can recognise how different font styles and effects are used for particular purposes.
Disciplinary knowledge	<ul style="list-style-type: none"> I can identify input and output devices and explain the processes they do. I can identify network devices around me and how they connect to one another. I can explain how switches, servers and wireless access points can be used in a network to share information. 	<ul style="list-style-type: none"> I can build a sequence of commands. I can combine and order commands in a program. I can create a sequence of commands to produce a given outcome. 	<ul style="list-style-type: none"> I can build , combine and correctly order commands in a sequence, to produce a desired output. I can change the sequencing of a program to make it more efficient. 	<ul style="list-style-type: none"> I can plan a storyboard and set up an animation work area, using a camera and models / drawings. I can capture images and use onion-skinning to reposition my subjects between captures. I can review / edit my animation sequence, adding media to enhance the animation. 	<ul style="list-style-type: none"> I can create questions with yes/no answers. I can choose questions that will divide objects into evenly-sized smaller groups. I can identify an object using a branching database and retrieve information from different levels of the database. 	<ul style="list-style-type: none"> I can add and organise text and image placeholders in a page layout, using a suitable style (landscape or portrait). I can add and remove images and text, to and from placeholders. I can edit font size and apply effects to it, and move/resize images in placeholders.
Key vocabulary	Network, data, server, wireless access points (WAPs), network switch, router, input, process, output, Wi-Fi, Bluetooth.	Debug, sequence, decompose, selection, repetition, variables, input, output, algorithms, programs, code, block-based coding, Scratch, sprite, staging area, code block, run, event block, control blocks	Sequence, sprite, event, action, program, pen, stage, algorithms, selection, repetition, code, debug, output.	Animation, sequence, onion-skinning, media, subject, storyboard, frame rate, frame, capture.	Branching database, Attribute / property, Yes/no questions, data, information.	Layout, landscape, portrait, placeholders, font, style, edit, right click, left click, group/ungroup.
Spiritual question	What is a computer? Write a definition.		How can computers help us understand the world and ourselves?		How do computers affect how we interact with each other?	

Knowing More. Remembering More. Applying More! Assessment in COMPUTING(Year 4)

Teachers to assess how well children have learned the required knowledge at the end of each term.

Working Towards (WTS) Expected (EXS) Greater Depth (GDS)

	Autumn Term 1- Networks- Internet	Autumn Term 2- Creating media – audio editing	Spring Term 1– Programming A- repetition editing	Spring Term 2 – Data handling – Data logging	Summer Term 1 – Programming B – repetition in games	SummerTerm 2 –Photo editing
Substantive Key Knowledge	<ul style="list-style-type: none"> •I can describe how networks connect and communicate with each other and that together, the global interconnection of networks make up the Internet. •I recognise that the World Wide Web (WWW) is a collection of websites and web pages, and that the Internet enables us to view these. •I understand that WWW content can be created by anyone and shared with everyone. 	<ul style="list-style-type: none"> • I know that sound can be recorded digitally and stored as a file, and can demonstrate ways to do this. • I know that digital audio can be edited and altered, and can demonstrate some ways to do this. • I can consider editing choices made, and understand their effects on finished media and its intended audience. 	<ul style="list-style-type: none"> • I can understand and identify ‘loops’ of repeated code within programs as repeating sets of instructions. • I know that looped code within programs can run for an indefinite amount of time, <i>or</i> for a specified number of times. • I can choose when to use a looped instruction in my program and justify its use. 	<ul style="list-style-type: none"> • I can recognise that sensors can be used to gather data to answer a specific question. • I understand what type of data to collect in order to answer a specific question. • I can explain that a data logger captures data from specific points in time, using an appropriate environmental sensor. 	<ul style="list-style-type: none"> • I understand that a loop command can be used to repeat instructions in a program. • I understand that you can program a loop to stop after a specific number of times. • I can explain the importance of instruction order in a loop, and justify when to use a loop and when not to. 	<ul style="list-style-type: none"> • I recognise that images can be changed for different purposes. • I can recognise that not all images are real, and that they can be manipulated. • I can consider the impact of the changes made on the quality of the image.
Disciplinary knowledge	<ul style="list-style-type: none"> •I can describe what the Internet is, and how devices physically connect. •I can explain what the World Wide Web is, and the difference between it and the Internet. •I can explain the different types of content that can be created for the WWW and evaluate its reliability, the usefulness of content created, and the consequences of unreliable content. 	<ul style="list-style-type: none"> • I can use Audacity to record sound digitally, using a device with a microphone and save it as an audio file, and locate the file again. • I can use Audacity to play back, select, edit and alter an audio file, and understand what layering sound means. • I can explain how my audio file is different and explain why I have changed it in that way. 	<ul style="list-style-type: none"> • I can use a count controlled loop or an indefinite loop to produce a specified output. • I can plan a program that includes loops to produce a given outcome. • I can create two or more sequences that can run at the same time. 	<ul style="list-style-type: none"> • I know where to place a sensor to collect specific data to answer a question. • I can identify a time frame and appropriate sensor to use, in order to capture data to answer a specific question. • I can collect, analyse, evaluate and present data, in order to answer a specific question. 	<ul style="list-style-type: none"> • I can use an indefinite (Forever) loop in a program, to produce a given outcome. • I can use a count-controlled loop (e.g.: repeat x10) in a program, to produce a given outcome. • I can create two or more sequences of code in a program, that run at the same time. 	<ul style="list-style-type: none"> • I can change the composition of images, including arranging images, cropping images and editing out a part of an image. • I can apply changes to the whole image or part of it, including adjusting colours, adding filters, adding effects, retouching. • I can add to an image, including drawing, add text, add an element (e.g.: borders, etc.)
Key vocabulary	Network, data, World Wide Web, Internet, web page, website, content, media, copywrite.	Audio file, digitally, microphone, select, input, output, volume, Audacity, podcast	Loops, count-controlled loops, infinite loops, repetition, algorithms, logo, input, output.	Sensor, data, information, data logger, time-frame, input, output.	Repetition, loop, indefinite, count-controlled, sequence, algorithm, sprite, debug.	Image, filters, cropping, editing, composition, select, group, clone
Spiritual question	What are the different types of computers? Where can you find them?		How can computers help us to understand where we came from?		Does a computer have a ‘soul’? Discuss.	

Knowing More. Remembering More. Applying More! Assessment in COMPUTING (Year 5)

Teachers to assess how well children have learned the required knowledge at the end of each term.

Working Towards (WTS) Expected (EXS) Greater Depth (GDS)

	Autumn Term 1- Programming A – Selection	Autumn Term 2- Creating media – vector drawing	Spring Term 1– Networks – sharing information	Spring Term 2 Creating Media video editing	Summer Term 1 – Data and infomation – Flat file directory	SummerTerm 2 –Programming B – Selection in quizzes
Substantive Key Knowledge	<ul style="list-style-type: none"> I understand sequence, selection and repetition in programming. I understand that a conditional statement, using ‘if...then...’ statements, can either be true or false. I understand that a loop can be used to check whether a condition has been met or not, and that it can stop when the condition has been met. 	<ul style="list-style-type: none"> I understand what a vector drawing is, and that different tools can be used to modify them. I know that objects can be layered and grouped, or sent backwards / forwards and how to do this. I know that vector images can be modified in a variety of ways, without impacting on quality, and can demonstrate this. 	<ul style="list-style-type: none"> I understand that a computer system is a collection of inputs, processes and outputs, and how they play a role in our lives. I understand that computers have protocols and rules to follow, so that information can be shared over the internet, using ‘packets’ of information. I can understand the benefits of computer systems in our lives and how they enable collaborative projects. 	<ul style="list-style-type: none"> I can identify the key concepts of video composition. I understand why I need to plan and create a video storyboard, capture video according to my plan, and edit my finished product. I recognise how to identify improvements to my video, and can consider the effect of editing choices made. 	<ul style="list-style-type: none"> I can explain that a computer program can be used to organise data. I can outline how operands (questions) can be used to filter data, and outline how ‘AND’ and ‘OR’ can be used to refine data selection. I can explain that we present information to communicate a message and that computer programs can be used to compare data visually. 	<ul style="list-style-type: none"> I understand that a condition can only be true or false. I can explain the difference between a count-controlled loop (e.g.: repeat x10) and a condition-controlled loop (e.g.: repeat until x=10, then stop all). I understand that a loop can be used to repeatedly check whether a condition (if...then...else) has been met.
Disciplinary knowledge	<ul style="list-style-type: none"> I can define sequence as being the order of instructions in a program, selection as being the outcome of a conditional statement, and repetition as a count-controlled loop in a program, which stops when a condition is met. I can use a condition in an ‘if... then...’ statement to produce a given outcome, and show that a condition can switch program flow in one of two ways. I can experiment with a ‘repeat until’ loop, changing counts and events within the loop. 	<ul style="list-style-type: none"> I can describe a vector drawing and create it as a 2D drawing on a screen. I can group and layer objects on a screen and evaluate the impact of my choices. I can use a variety of modifying tools to change a vector drawing, by selecting, rotating, dragging, repositioning, adding, recolouring, resizing and grouping objects. 	<ul style="list-style-type: none"> I can identify inputs, processes and outputs in a variety of computer systems. I can explain how computers ‘talk’ to one another, across a network system, in different countries, using ‘packets’ of information or data. I can use a computer system to collaborate on a project. 	<ul style="list-style-type: none"> I can use a video recording device to carry out the following functions: recording, panning, focussing, zooming and editing specific recording effects (e.g. filters). I can locate, playback and transfer/export video I have recorded. I can edit video using the following functions, justifying my choices: selecting specific sections, applying effects, deleting sections, splitting sections, cropping sections of video. 	<ul style="list-style-type: none"> I can choose different ways to view data, and choose which attribute and value to search by, to answer a given question (operand). I can choose multiple criteria to search data, in order to answer a given question (AND and OR). I can select an appropriate graph to visually compare data, and choose suitable ways to present data to other people. 	<ul style="list-style-type: none"> I can choose a condition to use in a program. I can create a condition-controlled loop (e.g.: repeat until x=10, then stop all) I can use a condition in an ‘if... then...else...’ statement to start an action, in order to switch program flow in one of two ways.
Key vocabulary	Crumble controller, Scratch, algorithm, sequence, selection (if...then...statements), repetition, loop, count-controlled or infinite loop, conditional statement, LED, sparkle, debug.	Vector drawing, layer, group, modify, 2D object.	Internet, computer system, packet, data, network, router, network switch, wifi, world wide web, input, process, output, IP address	Storyboard, panning, zooming, editing, filters, cropping, exporting.	Operand, data, information, selection, field, parameter, flat-file database.	Algorithm, sequence, repetition, selection, loop, condition, count-controlled loop, condition-controlled loop.
Spiritual question	What types of computers will there be in the future?		What is ‘artificial intelligence’?		How can computers help us to achieve a ‘higher level of awareness’ of ourselves?	

Knowing More. Remembering More. Applying More! Assessment in COMPUTING (Year 6)

Teachers to assess how well children have learned the required knowledge at the end of each term.

Working Towards (WTS) Expected (EXS) Greater Depth (GDS)

	Autumn Term 1- Networks - Communication	Autumn Term 2 – Data Handling – spread sheets	Spring Term 1– Programming A- Variables	Spring Term 2 – Programming B - Sensing	Summer Term 1 – Creating media – 3D Models	SummerTerm 2 – Creating Media – Website Creation
Substantive Key Knowledge	<ul style="list-style-type: none"> I understand that there are a number of search engines and I can explain how search results are found, ordered and ‘ranked’. I understand why the order of results is important, and to whom, and understand some of the limitations of search engines. I can define ‘communication’ and discuss the opportunities that technology offers for communication. 	<ul style="list-style-type: none"> I can explain what data is, and that it needs a context. I know a range of the different types of software that deal with and organise data. I can organise and present data appropriately and effectively, evaluating my data presentation and results in comparison to the question asked. 	<ul style="list-style-type: none"> I know that a variable is something that can be changed, in a program. I can identify examples of variables and recognise that variable scan be numbers or letters. I know that variables have specific names and can be used by programs to change outcomes. 	<ul style="list-style-type: none"> I know that a variable is something that can be changed, in a program. I know that variables have specific names and can be used by programs to change outcomes. I know how to use sequence, selection and repetition in code I write, to design a program which produces a specific outcome. 	<ul style="list-style-type: none"> I can recognise that a 3D environment can be viewed from different perspectives. I can show how placeholders can create holes in 3D objects. I can recognise that artefacts can be broken down into a collection of 3D objects. 	<ul style="list-style-type: none"> I understand that a website is a set of hyperlinked web pages and understand the relationship between HTML and what appears on the webpage. I can consider the ownership and use of images (copyright) on a website. I understand the need for a navigation pathway in webpage design.
Disciplinary knowledge	<ul style="list-style-type: none"> I can compare different search engines and explain why search results might be different, when searching for the same thing. I can evaluate the results of search terms and identify that results from search engines can include adverts, and that the adverts can be targeted at specific audiences. I can identify different ways to communicate without technology and evaluate different methods of online communication effectively. 	<ul style="list-style-type: none"> I can give examples of data types and contexts in which they may be used. I can identify and use data handling software and input, present and evaluate data. I can apply formulas to data, explaining how my data presentation represents the answer to a specific question. 	<ul style="list-style-type: none"> I can identify variables in existing programs and experiment with changing them. I can decide where in a program to set a variable and use an event to update it. I can use a variable in a conditional statement to control the flow of a program. 	<ul style="list-style-type: none"> I can design and write a program which uses inputs on a device or emulator to achieve a specified output. I can use logical reasoning to explain how my program works. I can spot errors in my code, debug them and suggest improvements. 	<ul style="list-style-type: none"> I can position 3D shapes and use digital tools to modify 3D objects. I can use digital tools to accurately size 3D objects and combine them to create a 3D digital artefact. I can construct a 3D model which reflects a real world object. 	<ul style="list-style-type: none"> I can review an existing website (navigation bars, header). I can create a new blank webpage and add text, images, change styles of font, and embed media. I can insert hyperlinks between pages and add links to another site.
Key vocabulary	Address bar, search box, World Wide Web, search engine, web crawler, page rank, ranking, communication, search terms.	Data, spreadsheet, cell, formula, select, duplicate, input, output, column, row, format.	Sequence, selection, repetition, variable, program, algorithm, string, outcome, abstraction.	MicroBit, emulator, input, sensor, output, step counter, conditional statement, sequence, selection, repetition, variable.	Perspective, 3D, digital tool, artefact, object, placeholder	Webpage, HTML, hyperlink, navigation pathway, header, links, copyright, fair use.
Spiritual question	What is feeling ‘spiritual’? How do computers help us to feel ‘spiritual’?		Can a computer be ‘alive’? Is ‘Alexa’ a person? Why / Why not?		If a computer can talk and act like a human, does that mean it has a ‘spirit’? Should it have rights, like a human	