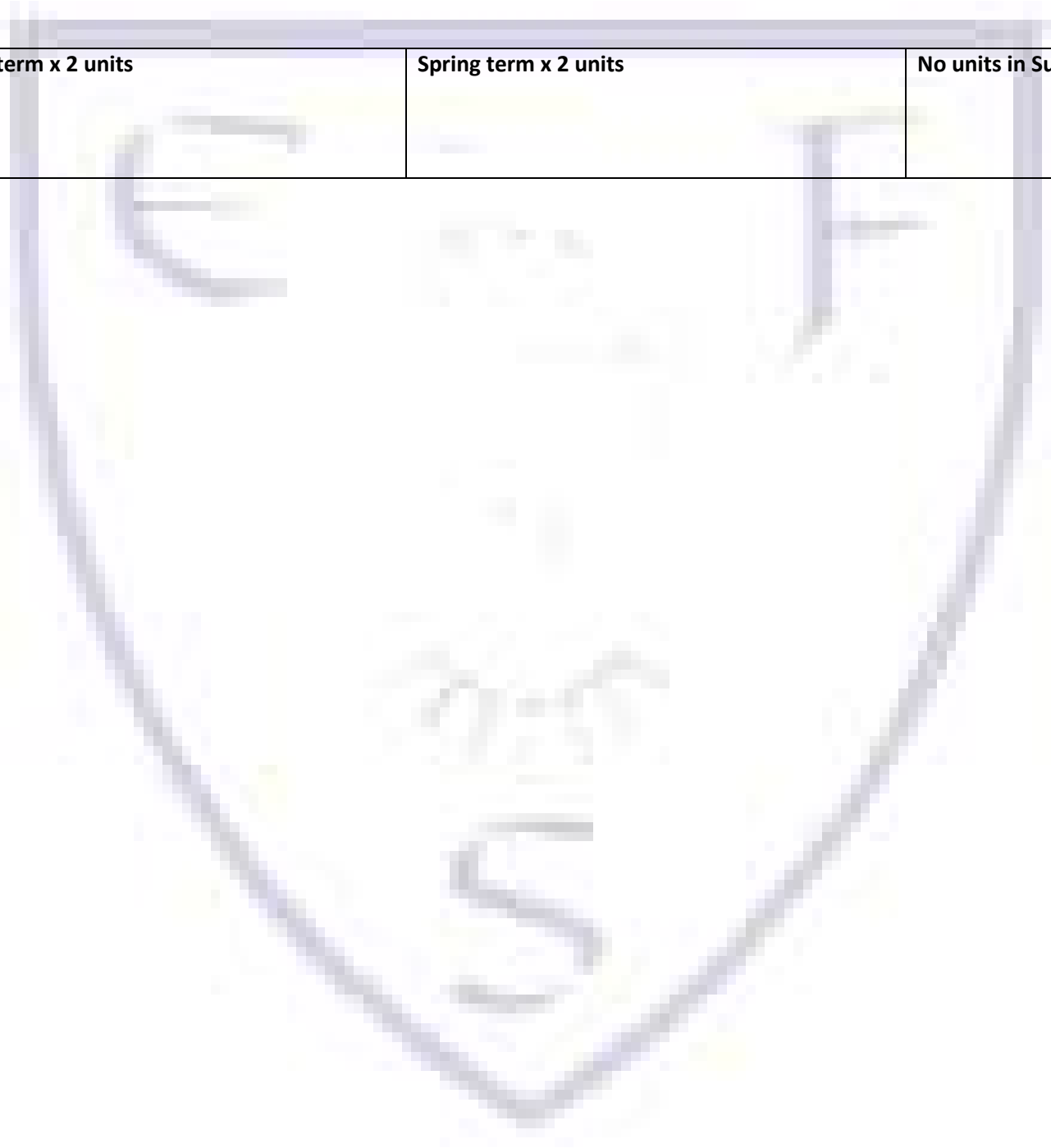


Curriculum Overview

Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Nursery	Can you sing your favourite nursery rhyme>	What makes a good friend?	What colours can I see around me?	Which pet will I choose?	What is your favourite food?	Can you tell me a story?
Units	Barefoot - Busy Bodies (x 4 lessons)		Barefoot – Boats Ahoy (x 4 lessons)		Barefoot – Super Space (x3 lessons)	
Computational Thinking - Concepts and Approaches	Logic, Pattern, Abstraction, Decomposition, Algorithms, Debugging		Logic, Pattern, Abstraction, Tinkering, Pattern, Decomposition, Collaborating, Algorithms, Creating		Algorithms, Collaborating, Persevering, Creating, Pattern, Logical reasoning, Tinkering, Abstraction	
Online Safety Scheme: National Online Safety	<p><u>Self-Image and Identity (4 lessons + 2 follow up tasks)</u></p> <ul style="list-style-type: none"> - I can name and recognise uncomfortable, embarrassed, and upset emotions - I can recognise, online or offline, that anyone can say ‘no thank you’/ ‘please stop’/ ‘I’ll tell’/‘I’ll ask’ to somebody who makes them feel sad, uncomfortable, embarrassed or upset <p><u>Online Relationships (3 lessons + 2 follow up tasks)</u></p> <ul style="list-style-type: none"> - I can recognise some ways in which the internet can be used to communicate - I can give examples of how I (might) use technology with people I know 		<p><u>Online Reputation (3 lessons + 2 follow up tasks)</u></p> <ul style="list-style-type: none"> - I can identify ways that I can put information on the internet. <p><u>Online Bullying (3 lessons + 2 follow up tasks)</u></p> <ul style="list-style-type: none"> - I can describe ways that some people can be unkind online - I can offer examples of how this can make others feel. 		<p>Opportunity to revisit previous units/consolidate learning</p>	

	Autumn term x 2 units	Spring term x 2 units	No units in Summer Term
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Curriculum Overview
Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Reception	What makes me great?	Why do we celebrate?	Where do I live?	What job do I want to have?	How do things grow?	How do we get there?
Units	Barefoot - Awesome Autumn (x 3 lessons)	Barefoot – Winter Warmers (x 3 lessons)	Barefoot – Spring Time (x 3 lessons)		Barefoot – Summer Fun (x 3 lessons)	
Computational Thinking - Concepts and Approaches	Algorithms, Decomposition, Collaborating, Logic, Creating, Pattern	Algorithms, Decomposition, Creating, Collaborating, Logic, Tinkering, Persevering, Pattern	Abstraction, Tinkering, Creating, Collaborating, Algorithms, Persevering, Decomposition		Creating, Pattern, Persevering, Logic, Algorithms, Collaborating, Tinkering, Debugging	
Online Safety Scheme: National Online Safety	<u>Managing Online Information</u> I can talk about how to use the internet as a way of finding information online. I can identify devices I could use to access information on the internet <u>Health, Well-being and Lifestyle</u> I can identify rules that help keep us safe and healthy in and beyond the home when I am using technology. I can give some simple examples of these rules I can apply these rules during my play I can link feelings to my online experiences		<u>Privacy and Security</u> I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location) I can describe who would be trustworthy to share this information with; I can explain why they are trusted. <u>Copyright and Ownership</u> I know that work I create belongs to me I can name my work so that others know it belongs to me I can express how I felt when I created this work		Opportunity to revisit previous units/consolidate learning	

		I can share my work with a friend	
	Autumn term x 2 units	Spring term x 2 units	No units in Summer Term



Curriculum Overview
Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y1	What is in the world around me?	Am I making history?	How do we know Birmingham and London are cities?		Do all superheroes wear capes?	
Units	Teach Computing Computing systems and networks – Technology around us	Teach Computing Programming A – Moving a robot	Teach computing Data and information – Grouping data	Word processing using Jit5 write	Teach computing Creating media – Digital painting	Teach Computing Programming B – Programming animations
Software	https://paintz.app Jit5 Write	Beebots, Scratch Jr.	Microsoft powerpoint/J2office	Jit5 Write Typing.com	Jit5 Paint	Beebots, Scratch Jr.
Final project			<u>Maths</u> Group data to answer questions about shapes	<u>Geography</u> Create a word processed document about Birmingham/London	<u>Science</u> Create a piece of artwork of plants in different seasons	
Evidence	Use Jit5 Write – pupils will need to be shown how to save their work! Copy chosen pupil's work into BGFL 'staffroom' folder	Using iPad, record 4 pupils SEN/BARE/ARE/ARE+ . Save into BGFL 'staffroom' folder	Copy 'Digital worksheet' into 'my files' on BGFL, share with pupils (pupil's work will then save automatically) Copy chosen pupil's work into	Accounts required for Typing.com Jit5 Write – remind pupils to save their work Copy chosen pupil's work into BGFL 'staffroom' folder	Pupils use Jit5 Paint – remember to save Copy chosen pupil's work into BGFL 'staffroom' folder	Using iPad, photograph/video pupils' Scratch projects (4 pupils SEN/BARE/ARE/ARE+). Save into BGFL 'staffroom' folder

		BGFL 'staffroom' folder		
<p>Online Safety</p> <p>Scheme: National Online Safety</p>	<p><u>Self Image and Identity</u></p> <p>I can recognise, online or offline, that anyone can say 'no'/'please stop'/'I'll tell'/'I'll ask' to somebody who makes them feel sad, uncomfortable, embarrassed or upset.</p> <p>I can recognise that there may be people online who could make someone feel sad, embarrassed or upset.</p> <p>If something happens that makes me feel sad, worried, uncomfortable or frightened, I can give examples of when and how to speak to an adult I can trust and how they can help.</p> <p><u>Online Relationships</u></p> <p>I can recognise some ways in which the internet can be used to communicate.</p> <p>I can give examples of how I (might) use technology to communicate with people I know.</p>	<p><u>Online Bullying</u></p> <p>I can describe ways that some people can be unkind online.</p> <p>I can offer examples of how this can make others feel.</p> <p>I can describe how to behave online in ways that do not upset others and can give examples.</p> <p><u>Managing Online Information</u></p> <p>I can talk about how to use the internet as a way of finding information online.</p> <p>I can identify devices I could use to access information on the internet.</p> <p>I can give simple examples of how to find information using digital technologies (e.g. search engines, voice activated searching).</p> <p>I know/understand that I can encounter a range of things online, including things I like and don't like as well as things which are real or make believe/a joke.</p>	<p><u>Privacy and Security</u></p> <p>I can identify some simple examples of my personal information (e.g. name, address, birthday, age, location).</p> <p>I can describe who would be trustworthy to share this information with; I can explain why they are trusted.</p> <p>I can explain that passwords are used to protect information, accounts and devices. I can recognise more detailed examples of information that is personal to someone (e.g. where someone lives and goes to school, family names).</p> <p>I can explain why it is important to always ask a trusted adult before sharing any personal information online belonging to myself or others.</p> <p><u>Copyright and Ownership</u></p> <p>I know that work I create belongs to me.</p> <p>I can name my work so that others know it belongs to me.</p>	

	<p>I can give examples of when I should ask permission to do something online and explain why this is important.</p> <p>I can use the internet with adult support to communicate with people I know (e.g. video call apps or services).</p> <p>I can explain why it is important to be considerate and kind to people online and to respect their choices.</p> <p>I can explain why things one person finds funny or sad online may not always be seen in the same way by others.</p> <p><u>Online Reputation</u> I can identify ways that I can put information on the internet.</p> <p>I can recognise that information can stay online and could be copied.</p> <p>I can describe what information I should not put online without asking a trusted adult first.</p>		<p>I know how to get help from a trusted adult if I see content that makes me feel sad, uncomfortable worried or frightened.</p> <p><u>Health, Well-being and Lifestyle</u> I can identify rules that help keep us safe and healthy in and beyond the home when using technology.</p> <p>I can give some simple examples of these rules.</p> <p>I can explain rules to keep myself safe when using technology both in and beyond the home.</p>		<p>I can explain why work I create using technology belongs to me.</p> <p>I can say why it belongs to me (e.g. 'I designed it' or 'I filmed it').</p> <p>I can save my work under a suitable title/name so that others know it belongs to me (e.g. filename, name on content).</p> <p>I understand that work created by others does not belong to me even if I save a copy</p>	
	Autumn term x 3 units		Spring term x 3 units		Summer term x 2 units	
Skill progression	I can locate examples of technology in the	I can compare forwards, backwards, left and right turns.	I can describe the properties of	I have completed 'Beginner' Lessons 1-8 on typing.com.	I can draw lines, make marks on a screen and explain	I can use commands to move a sprite.

	<p>classroom and how they help us</p> <p>I can use a mouse to create a picture</p> <p>I can use a mouse to open a program I can save my work to a file</p> <p>I can type my name on a computer I can delete letters</p> <p>I can open my work from a file</p> <p>I can identify rules to keep us safe and healthy when we are using technology in and beyond the home</p>	<p>I can predict the outcome of a sequence of forwards, backwards, left and right commands.</p> <p>I can use two different programs to get to the same place.</p>	<p>objects and group them using labels</p> <p>I can match objects to groups</p> <p>I can find objects with similar properties</p> <p>I can count how many objects share a property</p> <p>I can group similar objects in more than one way</p> <p>I can describe groups of objects and compare them</p> <p>I can decide how to group objects to answer a question</p>	<p>I can type on a keyboard.</p> <p>I can use the space bar to separate words.</p> <p>I can use the 'cap locks' key to make a capital letter.</p> <p>I can edit text (use backspace to remove a character).</p> <p>I can highlight text that I want to edit.</p> <p>I can open and continue with a previously saved piece of work.</p>	<p>which tools I used to draw a picture</p> <p>I can use the shape and line tools effectively</p> <p>I can choose appropriate shapes to make my picture</p> <p>I can choose appropriate paint tools and colours to recreate the work of an artist</p> <p>I can say which tools were helpful and why</p> <p>I can change the colour and brush sizes</p> <p>I can explain that pictures can be made in lots of different ways</p>	<p>I can use a Start block in a program.</p> <p>I can find blocks that have numbers and change their value.</p> <p>I can add and delete sprites.</p>
Vocabulary	Click, drag, mouse, select, program, type,	Floor robot/BeeBot, direction, command, forwards, backwards,	Group, data, property, similar, describe, table	Type, space bar, caps lock, backspace, edit,	Tools, paint, thick, thin, brush size, line, shape	Sprite, block, algorithm, background, delete

	delete, technology, cursor, keys, save, file	left, right, turn, program, debug		highlight, delete, character, save, open		
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Ambition - Community Equally

Curriculum Overview
Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y2	Why should I go to Sheldon?		What is it like in Africa?		Why do we visit the seaside?	
Units	Teach Computing Creating media – Digital photography	Teach Computing Programming A – Robot algorithms	Teach Computing Programming B – Programming Quizzes	Word processing using J2Office Writer	Teach Computing Information Technology Around Us	Teach Computing Pictograms
Software	Ipads	BeeBots	Scratch Jr.	J2Office Writer Typing.com	Microsoft powerpoint online	Jit 5 pictogram Jit 5 chart
Final project	<u>Geography</u> Photographs of local landmarks		<u>Geography/science</u> Create a quiz about habitats	<u>Geography</u> Create a word processed document about Kenya		<u>Maths/science</u> Make a survey about the seaside using Jit 5 pictogram/Jit 5 chart
Evidence	Using iPad, photograph pupils' final pieces (4 pupils SEN/BARE/ARE/ARE+). Save into BGFL 'staffroom' folder	Using iPad, record pupils' work (4 pupils SEN/BARE/ARE/ARE+). Save into BGFL 'staffroom' folder	Using iPad, photograph/video pupils' Scratch projects (4 pupils SEN/BARE/ARE/ARE +). Save into BGFL 'staffroom' folder	Accounts required for Typing.com J2Office Writer – pupil's work will save automatically	Evidenced through pupil voice/monitoring Please keep any worksheets in computing folder	Pupils save their work on Jit 5 pictogram and Jit 5 chart. Copy 4 pupils' work into BGFL 'staffroom' folder

				Copy chosen pupil's work into BGFL 'staffroom' folder		
<p>Online Safety</p> <p>Scheme: National Online Safety</p>	<p><u>Self Image and Identity</u> I can explain how other people may look and act differently online and offline.</p> <p>I can give examples of issues online that might make someone feel sad, worried, uncomfortable or frightened; I can give examples of how they might get help.</p> <p><u>Online Relationships</u> I can give examples of how someone might use technology to communicate with others they don't also know offline and explain why this might be risky (e.g. email, online gaming, a pen-pal in another school/country).</p> <p>I can explain who I should ask before sharing things about myself or others online.</p> <p>I can describe different ways to ask for, give or deny my permission online and can identify who can help me if I am not sure.</p> <p>I can explain why I have a right to say, 'no' or 'I will have to ask someone'. I can explain who can help me if I feel under pressure to</p>	<p><u>Online Bullying</u> I can explain what bullying is, how people may bully others and how bullying can make someone feel.</p> <p>I can explain why anyone who experiences bullying is not to blame.</p> <p>I can talk about how anyone experiencing bullying can get help.</p> <p><u>Managing Online Information</u> I can use simple keywords in search engines.</p> <p>I can demonstrate how to navigate a simple webpage to get to information I need (e.g. home, forward, back buttons; links, tabs and sections).</p> <p>I can explain what voice activated searching is and how it might be used, and I know it is not a real person (e.g. Alexa, Google Now, Siri).</p> <p>I can explain the difference between things that are imaginary, made up or make believe and things that are true or real.</p>			<p><u>Privacy and Security</u> I can explain how passwords can be used to protect information, accounts and devices.</p> <p>I can explain and give examples of what is meant by 'private' and 'keeping things private'.</p> <p>I can describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords).</p> <p>I can explain how some people may have devices in their homes connected to the internet and give examples (e.g. lights, fridges, toys, televisions).</p> <p><u>Copyright and Ownership</u> I can recognise that content on the internet may belong to other people.</p> <p>I can describe why other people's work belongs to them.</p>	

	<p>agree to something I am unsure about or don't want to do.</p> <p>I can identify who can help me if something happens online without my consent.</p> <p>I can explain how it may make others feel if I do not ask their permission or ignore their answers before sharing something about them online.</p> <p>I can explain why I should always ask a trusted adult before clicking 'yes', 'agree' or 'accept' online.</p> <p><u>Online Reputation</u> I can explain how information put online about someone can last for a long time.</p> <p>I can describe how anyone's online information could be seen by others.</p> <p>I know who to talk to if something has been put online without consent or if it is incorrect.</p>		<p>I can explain why some information I find online may not be real or true.</p> <p><u>Health, Wellbeing and Lifestyle</u> I can explain simple guidance for using technology in different environments and settings (e.g. accessing online technologies in public places and the home environment).</p> <p>I can say how those rules/guides can help anyone accessing online technologies.</p>			
	Autumn term x 3 units		Spring term x3 units		Summer term x 2 units	
Skill progression	I can take photos in a portrait and landscape format	I can follow a sequence.	I can identify the start of a sequence.	I have completed 'Beginner' Lessons 9-15 on typing.com.	I can identify examples of computers and	I can compare totals in a tally chart

	<p>and explain why a photo looks better in this format</p> <p>I can identify what is wrong with a photograph and improve a photo by retaking it</p> <p>I can explain why a picture may be unclear</p> <p>I can explore the effect that light has on a photo</p> <p>I can recognise that images can be changed</p> <p>I can use a tool to achieve a desired effect</p> <p>I can apply a range of photography skills to capture a photo</p> <p>I can identify which photos are real and</p>	<p>I can predict the outcome of a sequence.</p> <p>I can use an algorithm to program a sequence on a floor robot.</p> <p>I can create an algorithm to meet my goal.</p> <p>I can test and debug each part of the program.</p>	<p>I can predict the outcome of a sequence of commands.</p> <p>I can work out the actions of a sprite in an algorithm.</p>	<p>I can use the 'shift' key to make capital letters.</p> <p>I can start a new line using the 'enter' key.</p> <p>I can change the font size, style and colour.</p> <p>I can make text bold/italics/underlined.</p> <p>I can use the 'undo' and 'redo' icons.</p> <p>I can edit text by moving around the screen (with arrows or with finger).</p>	<p>describe some of their uses</p> <p>I can identify examples of IT and their uses</p> <p>I can identify that some IT can be used in more than one way</p> <p>I can sort IT by where it is found</p> <p>I can demonstrate how IT devices work together</p> <p>I can say how rules can help keep me safe</p> <p>I can talk about different rules for using IT</p> <p>I can identify the choices that I make when using IT</p>	<p>I can record data in a tally chart using a common attribute</p> <p>I can use pictograms to answer simple questions about objects ('more than'/'less than' and 'most/least' questions about an attribute)</p> <p>I can use a tally chart to create a pictogram</p> <p>I can collect the data I need</p> <p>I can create a pictogram and draw conclusions from it</p> <p>I can give simple examples of why information should not be shared</p>
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	which have been changed					
Vocabulary	Effects, lighting, framing, landscape, portrait, positioning, subject	Sequence, unambiguous, predict, code	Outcome, project, block, program,	Word processing, software, shift, new line, enter, format, font, size, style, colour, bold, italics, underline, undo, redo, arrow keys	Information Technology, devices, network	Common attribute, data, chart, graph, pictogram, tally chart, compare



Curriculum Overview

Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y3	How do I use a map?	How do natural disasters affect the world?	Stone Age to Iron Age: How did Britain change?		Why is Greece popular?	What did the Ancient Greeks do for us?
Units	Teach Comp Branching databases	Word processing	Teach comp Stop-frame animation	Teach computing Connecting computers	Teach Computing Programming A – Sequencing Sounds	Teach Computing Programming B – Events and actions in programs
Software	J2data Branch and Pictogram	J2Office Writer	iMotion	Paint	Scratch	Scratch
Final project	<u>Geography/Maths</u> Create a branching database to sort between OS map symbols	<u>Geography</u> create a word processed document about natural disasters	<u>History</u> Stop motion animation of improvements between Stone Age – Iron Age		<u>Music</u> Create a concert containing at least 3 musical instruments	
Evidence	Pupils save their work on J2 Data Branch and Pictogram Copy 4 pupils' work into BGFL 'staffroom' folder	Copy 4 pupils' work into BGFL 'staffroom' folder	Using iPad, record pupils' work (4 pupils SEN/BARE/ARE/ARE+). Save into BGFL 'staffroom' folder	Evidenced through pupil voice/monitoring Please keep any worksheets in computing folder	Using iPad, record pupils' work (4 pupils SEN/BARE/ARE/ARE+). Save into BGFL 'staffroom' folder	

Assessment	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead	Assessment against ‘skill progression’ statements – pupil voice/monitoring	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead
<p>Online Safety</p> <p>Scheme: National Online Safety</p>	<p><u>Self Image and Identity</u></p> <p>I can explain what is meant by the term ‘identity’.</p> <p>I can explain how people can represent themselves in different ways online.</p> <p>I can explain ways in which someone might change their identity depending on what they are doing online (e.g. gaming, using an avatar, social media) and why.</p> <p><u>Online Relationships</u></p> <p>I can describe ways people who have similar likes and interests can get together online.</p> <p>I can explain what it means to ‘know someone’ online and why this might be different from knowing someone offline.</p> <p>I can explain what is meant by ‘trusting someone online’, why this is different from ‘liking someone online’, and why it is important to be careful about who to trust online, including what information and content they are trusted with.</p>	<p><u>Online Bullying</u></p> <p>I can describe appropriate ways to behave towards other people online and why this is important.</p> <p>I can give examples of how bullying behaviour could appear online and how someone can get support.</p> <p><u>Managing Online Information</u></p> <p>I can demonstrate how to use key phrases in search engines to gather accurate information online.</p> <p>I can explain what autocomplete is and how to choose the best suggestion.</p> <p>I can explain how the internet can be used to sell and buy things.</p> <p>I can explain the difference between a belief, an opinion and a fact and can give examples of how and where they might be shared online (e.g. in videos, memes, posts, news stories).</p>	<p><u>Privacy and Security</u></p> <p>I can describe simple strategies for creating and keeping passwords private.</p> <p>I can give reasons why someone should only share information with people they choose and can trust. I can explain that if they are not sure or feel pressured, they should tell a trusted adult.</p> <p>I can describe how connected devices can collect and share anyone’s information with others.</p> <p><u>Copyright and Ownership</u></p> <p>I can explain why copying someone else’s work from the internet without permission isn’t fair and can explain what problems this might cause.</p>			

	<p>I can explain why someone may change their mind about trusting anyone with something if they feel nervous, uncomfortable or worried.</p> <p>I can explain how someone's feelings can be hurt by what is said or written online.</p> <p>I can explain the importance of giving and gaining permission before sharing things online and how the principles of sharing online are the same as sharing offline (e.g. sharing images and videos).</p> <p><u>Online Reputation</u></p> <p>I can explain how to search for information about others online.</p> <p>I can give examples of what anyone may or may not be willing to share about themselves online.</p> <p>I can explain the need to be careful before sharing anything personal.</p> <p>I can explain who someone can ask if they are unsure about putting something online.</p>		<p>I can explain that not all opinions shared may be accepted as true or fair by others (e.g. monsters under the bed).</p> <p>I can describe and demonstrate how we can get help from a trusted adult if we see content that makes us feel sad, uncomfortable worried or frightened.</p> <p><u>Health, Wellbeing and Lifestyle</u></p> <p>I can explain why spending too much time using technology can sometimes have a negative impact on anyone (e.g. mood, sleep, body, relationships). I can give some examples of both positive and negative activities where it is easy to spend a lot of time engaged (e.g. doing homework, games, films, videos).</p> <p>I can explain why some online activities have age restrictions, why it is important to follow them and know who I can talk to if others pressure me to watch or do something online that makes me feel uncomfortable (e.g. age restricted gaming or web sites).</p>			
	Autumn term x 3 units		Spring term x3 units		Summer term x 2 units	
Skill progression	I can create questions to sort objects based around yes/no answers	I have completed 'Intermediate' Lessons 1-6 on typing.com.	I can explain how an animation/flip book works, can draw a sequence of pictures	I can explain that digital devices accept inputs and produce outputs	I can recognise that commands in Scratch are represented as blocks.	I can explain the relationship between an event and an action.

	<p>I can select an attribute to separate objects into groups</p> <p>I can select objects to arrange into a branching database based upon answers to yes/no questions</p> <p>I can check that my branching database works</p> <p>I can compare the structure of two branching databases and comment upon their effectiveness</p> <p>I can use a branching database to answer questions</p> <p>I can explain what a pictogram/branching database tells me and compare their ways of presenting information</p>	<p>I can make use of the spellchecker.</p> <p>I can save my work and assign an appropriate name to it.</p> <p>I can align text (left/right/centred/justified).</p> <p>I can use bullet points and numbered lists.</p> <p>I can use the shift key to insert ? ! &</p> <p>I can use the 'insert' function to add images, shapes and text boxes.</p> <p>I can screenshot an image and crop to size.</p>	<p>and create an effective animation</p> <p>I can explain why little changes are needed for each frame</p> <p>I can predict what an animation will look like and can explain why small changes are needed between frames</p> <p>I can describe an animation that is achievable on screen</p> <p>I can use onion skinning to help me make small changes between frames</p> <p>I can evaluate my own and another learner's animation and identify ways in which it can be improved</p> <p>I can add other media to my animation</p>	<p>and can classify these inputs/outputs</p> <p>I can describe and follow a simple process</p> <p>I can explain how I use digital devices for different activities</p> <p>I can recognise similarities and differences between using digital devices and non-digital tools</p> <p>I can explain how messages are passed through multiple connections and can recognise different connections</p> <p>I can demonstrate how information can be passed between devices</p> <p>I can explain the role of a switch, server, and wireless access point in a network</p> <p>I can recognise that a computer network is made up of a number</p>	<p>I can identify that each sprite is controlled by the commands I choose.</p> <p>I can create a sequence of connected commands.</p> <p>I can build a sequence of commands.</p>	<p>I can program movement.</p> <p>I can match a piece of code to an outcome.</p> <p>I can evaluate my project.</p>
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				of devices and can identify how they are connected together		
Vocabulary	Branching database, pictogram, attribute, tree structure	Spellchecker, folder, subfolder, layout, align, justified, bullet points, numbered lists, inset, image, shape, text box, screenshot, snipping tool, crop, resize	Stop motion, onion-skimming, animation, frame	Process, digital device, non-digital tool, computer network, switch, server, wireless access point	Programming environment, objects, backdrops, attribute, motion, event block, sound, costume	Event, navigate, bug, evaluate





Curriculum Overview

Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y4	Home or abroad?	What did the Romans do for us?	Why was Britain invaded by the Saxons and Vikings?		What is a biome? Why are rainforests and oceans important to our lives?	
Units	Word processing	Teach Computing Programming A – Repetition in Shapes	Teach computing Data logging	Teach computing The Internet	Teach computing photo editing	Teach Computing Programming B – Repetition in Games
Software	Microsoft Word Online (available on BGFL365)	Logo turtleacademy.com/playground	Data loggers Easy sense iPads with Data logging app	Chrome Music Lab (chromeexperiments.com)	Befunky.com Paint.NET	Scratch
Final project	<u>Geography</u> Create a word processed document about places to visit		<u>Science</u> Using a data logger to sense temperature		<u>Geography</u> Edit biome images found online	
Evidence	Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder	Pupils to screenshot work and save as J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder	Evidenced through pupil voice/monitoring Please keep any worksheets in computing folder	Evidenced through pupil voice/monitoring Please keep any worksheets in computing folder		
Assessment	Assessment against 'skill progression' statements – pupil voice/monitoring	Complete summative assessment (with planning documents) – pass on 4 focus chn's	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn's	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete rubric for focus chn at end of unit – pass onto subject lead

	assessments to subject lead	assessments to subject lead	
<p>Online Safety</p> <p>Scheme: National Online Safety</p>	<p><u>Self Image and Identity</u></p> <p>I can explain how my online identity can be different from my offline identity.</p> <p>I can describe positive ways for someone to interact with others online and understand how this will positively impact on how others perceive them.</p> <p>I can explain that others online can pretend to be someone else, including my friends, and I can suggest reasons why they might do this.</p> <p><u>Online Relationships</u></p> <p>I can describe strategies for safe and fun experiences in a range of online social environments (e.g. livestreaming, gaming platforms).</p> <p>I can give examples of how to be respectful to others online and describe how to recognise healthy and unhealthy online behaviours.</p> <p>I can explain how content shared online may feel unimportant to one person but may be important to other people's thoughts, feelings and beliefs.</p>	<p><u>Online Bullying</u></p> <p>I can recognise when someone is upset, hurt or angry online.</p> <p>I can describe ways people can be bullied through a range of media (e.g. image, video, text, chat).</p> <p>I can explain why people need to think carefully about how content they post might affect others, their feelings and how it may affect how others feel about them (their reputation).</p> <p><u>Managing Online Information</u></p> <p>I can analyse information to make a judgement about probable accuracy, and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others.</p> <p>I can describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy (e.g. social media, image sites, video sites).</p> <p>I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers, in-app purchases, pop-</p>	<p><u>Privacy and Security</u></p> <p>I can describe strategies for keeping personal information private, depending on context.</p> <p>I can explain that internet use is never fully private and is monitored.</p> <p>I can describe how some online services may seek consent to store information about me. I know how to respond appropriately and who I can ask if I am not sure.</p> <p>I know what the digital age of consent is and the impact this has on online services asking for consent.</p> <p><u>Copyright and Ownership</u></p> <p>When searching on the internet for content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it.</p> <p>I can give some simple examples of content which I must not use without permission from the owner (e.g. videos, music, images).</p>

	<p><u>Online Reputation</u> I can describe how to find out information about others by searching online.</p> <p>I can explain ways that some of the information about anyone online could have been created, copied or shared by others.</p>	<p>ups) and can recognise some of these when they appear online.</p> <p>I can explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true. I can explain that technology can be designed to act like, or impersonate, living things (e.g. bots) and describe what the benefits and the risks might be.</p> <p>I can explain what is meant by fake news; for example, why some people will create stories or alter photographs and put them online to pretend something is true when it isn't.</p> <p><u>Health, Wellbeing and Lifestyle</u> I can explain how using technology can be a distraction from other things in a positive and negative way.</p> <p>I can identify times or situations when someone may need to limit the amount of time they use technology. For example, I can suggest strategies to help with limiting this time.</p>	
	Autumn term x 3 units	Spring term x3 units	Summer term x 2 units

<p>Skill progression</p>	<p>I have completed 'Intermediate' Lessons 7-12 on typing.com.</p> <p>I can use the thesaurus tool to improve my vocabulary.</p> <p>I can use the 'word count' tool.</p> <p>I can change the orientation, size and margins.</p> <p>I can insert hyperlinks.</p> <p>I can use 'text-wrapping' when inserting an image.</p> <p>I can use the 'insert' function to add a table.</p> <p>I can adjust the size and number of rows</p>	<p>I can explain the effect of changing a value of a command.</p> <p>I can test my algorithm in a text-based language.</p> <p>I can predict the outcome of a program containing a count-controlled loop.</p> <p>I can use a procedure in a program.</p>	<p>I can explain that data gathered over time can be used to answer questions</p> <p>I can use a digital device to collect data automatically</p> <p>I can explain that a data logger collects 'data points' from sensors over time</p> <p>I can recognise how a computer can help us analyse data</p> <p>I can identify the data needed to answer questions</p> <p>I can use data from sensors to answer questions</p>	<p>I can describe how networks physically connect to other networks</p> <p>I can recognise how networked devices make up the internet</p> <p>I can outline how websites can be shared via the World Wide Web (WWW)</p> <p>I can describe how content can be added and accessed on the WWW</p> <p>I recognise that the content of the WWW is created by people</p> <p>I can evaluate the consequences of unreliable content</p>	<p>I can identify changes that need to be made to an image and can explain the effect of editing and image</p> <p>I can describe how images can be changed for different uses</p> <p>I can make good choices when selecting editing tools</p> <p>I can recognise that not all images are real</p> <p>I can evaluate how changes can improve an image</p>	<p>I can identify conditions in a program.</p> <p>I can create a program with different outcomes using selection.</p> <p>I can identify the outcome of user input in an algorithm.</p>
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	and columns in a table.					
Vocabulary	Thesaurus tool, review, word count, orientation, size, margin, hyperlink, text-wrapping, table, row, column	Selection, if..then, condition, output device, input device, LED, circuit, microcontroller, motor, 'do until' loop	Data logger, data set, sensors, intervals, interpret, conclusions	Network, network of networks, networked devices, World Wide Web (WWW), content, ambiguous	Digital image, editing, composition, retouching	'if...then...else...', binary, branching structure



Curriculum Overview

Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y5	What is a river's journey?		Who were Britain's famous monarchs?	Why does the USA have different climate zones?	What were the achievements of the Ancient Egyptians?	
Units	Teach computing - Video production	Teach computing - Computing systems and networks sharing information	Word processing	Teach computing flat-file data bases	Teach Computing Programming B – Selection in Quizzes	Micro:bit https://microbit.org/lessons/data-handling-unit-summary/
Software	iPad 'photos' app	Various search engines – referenced in planning docs	Word online	J2 data databases	Scratch	Microbit, MakeCode editor
Final project	<u>Geography</u> Create a video about mountains/ivers		<u>History</u> Create a word processed document about famous kings and queens	<u>Maths/geography/PSHE</u> create a database about holiday details	<u>History</u> Design a quiz about the Ancient Egyptians	<u>DT</u> Design a gadget that can that either responds to changes in light level or temperature
Evidence	Pupils to copy their videos into a J2e5 document and save. Copy files for 4 focus chn into BGFL 'staffroom' folder Please keep any worksheets in computing folder	Please keep any worksheets in computing folder Evidenced through pupil voice/monitoring	Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder	Pupils to save their databases. Teacher copy files for 4 focus chn into BGFL 'staffroom' folder Please keep any worksheets in computing folder	Please keep any worksheets in computing folder	Please keep any worksheets in computing folder Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder

						Where applicable, video micro:bits performing the tasks that they have been programmed with – also copy into ‘staffroom’ folder – <i>be sure to provide pupils names with the micro:bits</i>
Assessment	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead	Assessment against ‘skill progression’ statements – pupil voice/monitoring	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn’s assessments to subject lead	Assessment against ‘skill progression’ statements – pupil voice/monitoring
Online Safety Scheme: National Online Safety	<u>Self Image and Identity</u> I can explain how identity online can be copied, modified or altered. I can demonstrate how to make responsible choices about having an online identity, depending on context. <u>Online Relationships</u> I can give examples of technology-specific forms of communication (e.g. emojis, memes and GIFs). I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my/our fault.	<u>Online Bullying</u> I can recognise that online bullying can be different from bullying in the physical world and can describe some of those differences. I can describe how what one person perceives as playful joking and teasing (including ‘banter’) might be experienced by others as bullying. I can explain how anyone can get help if they are being bullied online and identify when to tell a trusted adult.	<u>Privacy and Security</u> I can explain what a strong password is and demonstrate how to create one. I can explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. I can explain what app permissions are and can give some examples. <u>Copyright and Ownership</u> I can assess and justify when it is acceptable to use the work of others.			

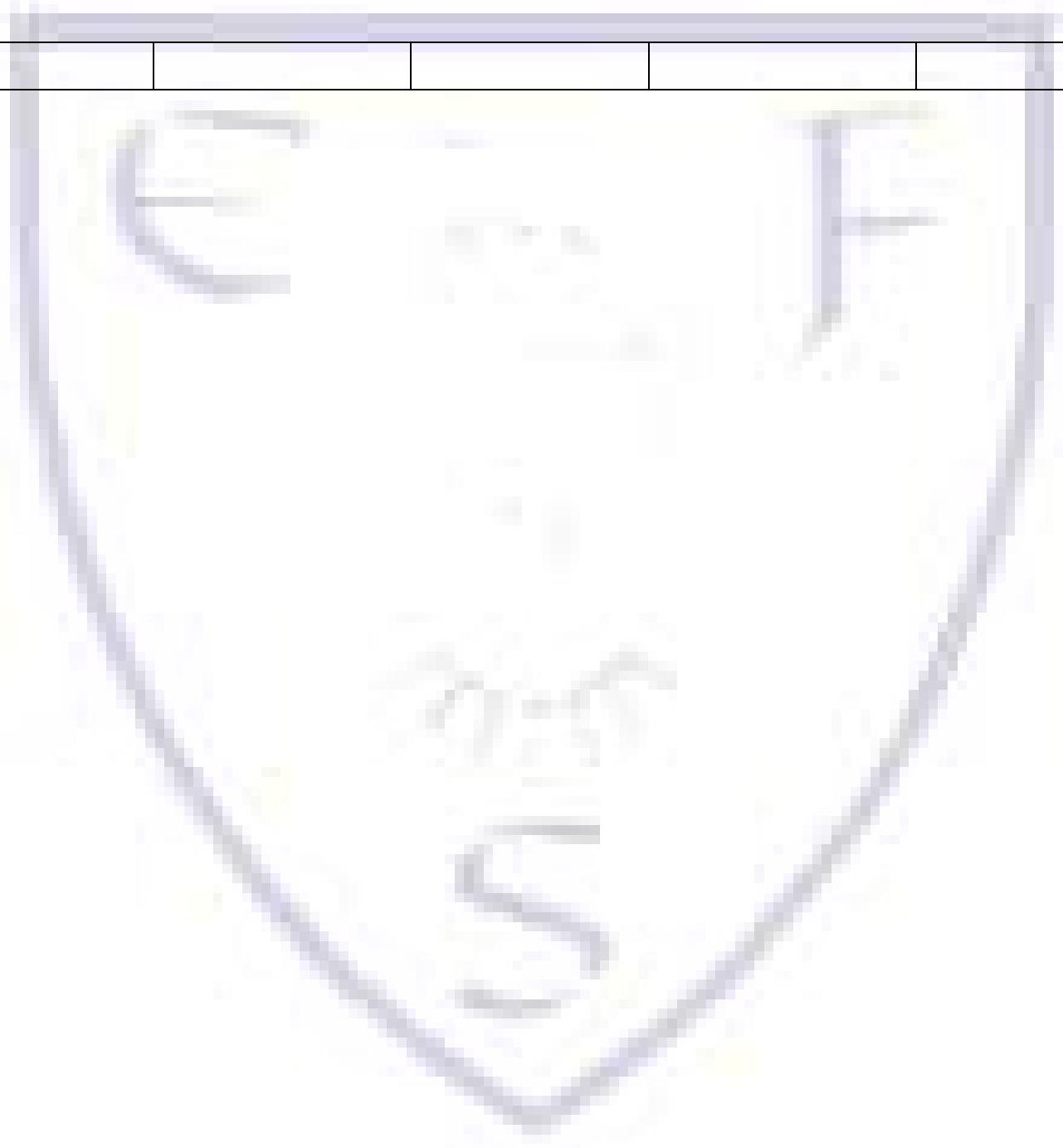
	<p>I can describe some of the ways people may be involved in online communities and how they might collaborate constructively with others and make positive contributions. (e.g. gaming communities and social media groups).</p> <p>I can explain how someone can get help if they are having problems and identify when to tell a trusted adult.</p> <p>I can demonstrate how to support others (including those who are having difficulties) online.</p> <p><u>Online Reputation</u></p> <p>I can search for information about an individual online and summarise the information found.</p> <p>I can describe ways that information about anyone online can be used by others to make judgments about an individual and why these may be incorrect</p>	<p>I can identify a range of ways to report concerns and access support in school and at home about online bullying.</p> <p>I can explain how to block abusive users.</p> <p>I can describe helpline services which can help people experiencing bullying and how to access them (e.g. Childline or The Mix).</p> <p><u>Managing Online Information</u></p> <p>I can explain the benefits and limitations of using different types of search technologies such as voice-activation search engines. I can explain how some technology can limit the information I am presented with, for example voice-activated searching giving one result.</p> <p>I can explain what is meant by ‘being sceptical’; I can give examples of when and why it is important to be sceptical.</p> <p>I can evaluate digital content and can explain how to make choices about what is trustworthy, for example differentiating between adverts and search results.</p> <p>I can explain key concepts, including information, reviews, fact, opinion, belief, validity, reliability and evidence.</p>	<p>I can give examples of content that is permitted to be reused and know how this content can be found online.</p>
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		<p>I can identify ways the internet can draw us to information for different agendas (e.g. website notifications, pop-ups, targeted ads).</p> <p>I can describe ways of identifying when online content has been commercially sponsored or boosted (e.g. by commercial companies or by vloggers, content creators, influencers).</p> <p>I can explain what is meant by the term 'stereotype', how stereotypes are amplified and reinforced online and why accepting stereotypes may influence how people think about others.</p> <p>I can describe how fake news may affect someone's emotions and behaviour and explain why this may be harmful.</p> <p>I can explain what is meant by a hoax. I can explain why someone would need to think carefully before they share.</p> <p><u>Health, Wellbeing and Lifestyle</u> I can describe ways technology can affect health and well-being positively (e.g. mindfulness apps) and negatively.</p>	
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			<p>I can describe some strategies, tips or advice regarding technology to promote health and wellbeing.</p> <p>I recognise the benefits and risks of accessing information about health and well-being online and how we should balance this with talking to trusted adults and professionals.</p> <p>I can explain how and why some apps and games may request or take payment for additional content (e.g. in-app purchases, loot boxes) and explain the importance of seeking permission from a trusted adult before purchasing.</p>			
	Autumn term x 3 units		Spring term x3 units		Summer term x 2 units	
Skill progression	<p>I can explain what makes a video effective</p> <p>I can use a digital device to record video</p> <p>I can capture video using a range of techniques</p> <p>I can create a storyboard</p>	<p>I can explain that computers can be connected together to form systems</p> <p>I can recognise the role of computer systems in our lives</p> <p>I can recognise how information is transferred over the internet</p>	<p>I have completed 'Advanced' Lessons 1-4 on typing.com.</p> <p>I can choose an appropriate layout, font, size and colour to meet a specific audience/purpose.</p> <p>I can use keyboard shortcuts, e.g. add a hyperlink (Ctrl + k),</p>	<p>I can use a form to record information</p> <p>I can compare paper and computer-based databases</p> <p>I can outline how grouping and then sorting data allows us to answer questions</p>	<p>I can identify conditions in a program.</p> <p>I can create a program with different outcomes using selection.</p> <p>I can identify the outcome of user input in an algorithm.</p>	<p>I know that mechanical and electrical systems have an input, process and output</p> <p>I know how more complex electrical circuits and components can be used to create functional products</p> <p>I know how to program a computer</p>

	<p>I can improve my video through reshooting and editing</p> <p>I can consider the impact of the choices made when making and sharing video</p>	<p>I can explain how sharing information online lets people in different places work together</p> <p>I can contribute to a shared project online</p> <p>I can evaluate different ways of working together online</p>	<p>select all (Ctrl + a) etc.</p> <p>I can insert special symbols, e.g. ÷ ° ½ etc.</p> <p>I can add headers/footers and page numbers to my work.</p> <p>I can add comments to my own work</p>	<p>I can explain that tools can be used to select specific data</p> <p>I can explain that computer programs can be used to compare data visually</p> <p>I can apply my knowledge of a database to ask and answer real-world questions</p>	<p>I can show that a condition can direct program flow in one of two ways.</p> <p>I can test my program, share it with others and identify ways in which it can be improved.</p>	<p>to monitor changes in the environment and control their products</p> <p>Computing only...</p> <p>I understand what data is, how to classify it and how it might be used.</p> <p>I can write a simple program using sensors</p> <p>I can use a micro:bit to collect data</p> <p>I can write a program using that uses data as a condition</p> <p>I can write a program to use a micro:bit as a digital assistant</p>
Vocabulary	Media format, video production/editing, editing software, editing techniques	Systems, IP address, protocol, collaborative, public, private	Numeric keypad, shortcut, control (ctrl), special symbol, header, footer, page number, share, comment	Record card database, records, fields, grouping, sorting	Storyboard, binary question	Microbit, program, input, output, algorithm, sequence, variable, connection, positive, negative

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Curriculum Overview

Subject: Computing

	Autumn	Autumn	Spring	Spring	Summer	Summer
Y6	What impact did the Maya civilisation have on Birmingham?		What was the impact of WWII on the West Midlands?		Why was the Industrial Revolution important to the West Midlands?	
Units	Teach Computing Introduction to spreadsheets	Teach Computing Programming A – Variables in Games	Word processing	Teach Computing Creating Media – 3D modelling	Teach Computing Computing systems and networks - Communication and collaboration	Teach Computing Programming B – Sensing Movement (Lessons 1-4) Then for project, children can choose between: Simple door alarm micro:bit (microbit.org) Simple tilt alarm micro:bit (microbit.org) Pressure switch alarm micro:bit (microbit.org)
Software	Microsoft Excel Online	Scratch	Word Online/PowerPoint Online/J2e5/J2Office Writer (pupil's choice) Typing.com	Tinkercad	-Google Workspace/Microsoft PPT required for lesson 3 (for collaboration)	Micro:bit Make Code

					Scratch required for lesson 4 – pupils all need their own accounts	
Final project		<u>Geography</u> Design a game in the context of Mexico	<u>History</u> create a word processed document about WWII	<u>DT</u> Design a shelter for KS1 playground		<u>DT</u> Design an intruder alarm
Evidence	Please keep any worksheets in computing folder Pupils to screenshot their work and save as a J2e5 document. Teacher to copy work for 4 focus chn into BGFL 'staffroom' folder	Please keep any worksheets in computing folder	Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder	<u>Pupil's will need their own accounts – accessible through a teacher account (which needs creating first). Pupil's work saves automatically</u> Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder	Please keep any worksheets in computing folder	Pupils to screenshot work and copy onto a J2e5 document Copy 4 pupils' work into BGFL 'staffroom' folder Where applicable, video micro:bits performing the tasks that they have been programmed with – also copy into 'staffroom' folder – <i>be sure to provide pupils names with the micro:bits!</i>
Assessment	Complete summative assessment (with planning documents) – pass on 4 focus chn's assessments to subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn's assessments to subject lead	Assessment against 'skill progression' statements – pupil voice/monitoring	Complete rubric for focus chn at end of unit – pass onto subject lead	Complete summative assessment (with planning documents) – pass on 4 focus chn's assessments to subject lead	Assessment against 'skill progression' statements – pupil voice/monitoring
Online Safety	<u>Self Image and Identity</u> I can identify and critically evaluate online content relating to gender, race, religion,		<u>Online Bullying</u> I can describe how to capture bullying content as evidence (e.g. screen-grab, URL,		<u>Privacy and Security</u> I can describe effective ways people can manage passwords, for example storing	

<p>Scheme: National Online Safety</p>	<p>disability, culture and other groups and explain why it is important to challenge and reject inappropriate representations online.</p> <p>I can describe issues online that could make anyone feel sad, worried, uncomfortable or frightened. I know and can give examples of how to get help online and offline.</p> <p>I can explain the importance of asking until I get the help needed.</p> <p><u>Online Relationships</u></p> <p>I can explain how sharing something online may have an impact either positively or negatively.</p> <p>I can describe how to be kind and show respect for others online including the importance of respecting boundaries regarding what is shared about them online and how to support them if others do not.</p> <p>I can describe how things shared privately online can have unintended consequences for others, for example screen-grabs.</p> <p>I can explain that taking or sharing inappropriate images of someone, for example embarrassing images, even if they say it is okay, may have an impact for the</p>	<p>profile) to share with others who can help me.</p> <p>I can explain how someone could report online bullying in different contexts.</p> <p><u>Managing Online Information</u></p> <p>I can explain how search engines work and how results are selected and ranked.</p> <p>I can explain how to use search technologies effectively.</p> <p>I can describe how some online information can be opinion and can offer examples.</p> <p>I can explain how and why some people may present opinions as facts, and why the popularity of an opinion or the personalities of those promoting it does not necessarily make it true, fair or perhaps even legal.</p> <p>I can define the terms ‘influence’, ‘manipulation’ and ‘persuasion’ and explain how someone might encounter these online, for example advertising, ad targeting and targeting for fake news.</p>	<p>them securely or saving them in the browser.</p> <p>I can explain what to do if a password is shared, lost or stolen.</p> <p>I can describe how and why people should keep their software and apps up to date, for example auto updates.</p> <p>I can describe simple ways to increase privacy on apps and services that provide privacy settings.</p> <p>I can describe ways in which some online content targets people to gain money or information illegally; I can describe strategies to help me identify such content (e.g. scams, phishing).</p> <p>I know that online services have terms and conditions that govern their use.</p> <p><u>Copyright and Ownership</u></p> <p>I can demonstrate the use of search tools to find and access online content which can be reused by others.</p> <p>I can demonstrate how to make references to, and acknowledge, sources I have used from the internet.</p>
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<p>sharer and others. I can also explain who can help if someone is worried about this.</p> <p><u>Online Reputation</u></p> <p>I can explain the ways in which anyone can develop a positive online reputation.</p> <p>I can explain strategies anyone can use to protect their digital personality and online reputation, including degrees of anonymity.</p>	<p>I understand the concept of persuasive design and how it can be used to influences peoples' choices.</p> <p>I can demonstrate how to analyse and evaluate the validity of facts and information, and I can explain why using these strategies is important.</p> <p>I can explain how companies and news providers target people with online news stories they are more likely to engage with and how to recognise this.</p> <p>I can describe the difference between online misinformation and disinformation.</p> <p>I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen, for example the sharing of misinformation or disinformation.</p> <p>I can identify, flag and report inappropriate content.</p> <p><u>Health, Wellbeing and Lifestyle</u></p> <p>I can describe common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose.</p>	
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	Autumn term x 3 units		Spring term x3 units		Summer term x 2 units National Online Safety + 1 'BBFC: Let's watch a film!' unit	
Skill progression	<p>I can create a data set in a spreadsheet</p> <p>I can build a data set in a spreadsheet</p> <p>I can explain that formulas can be used to produce calculated data</p> <p>I can apply formulas to data</p>	<p>I can identify examples of information that is variable.</p> <p>I can make use of an event in a program to set a variable.</p> <p>I can recognise that the value of a variable can be used by a program.</p>	<p>I have completed 'Advanced' Lessons 5-7 on typing.com.</p> <p>Year 6 Project: I can produce a professional piece of writing for a specified topic, using an appropriate layout and formality.</p> <p>I can choose appropriate word processing software to complete a specific task and explain my</p>	<p>I can select, move and delete a digital 3D shape.</p> <p>I can change the colour and resize a 3D object.</p> <p>I can rotate 3D objects, position them in relation to each other and select and delete multiple objects.</p> <p>I can group a digital 3D shape and a</p>	<p>I can identify how to use a search engine</p> <p>I can describe how search engines select results</p> <p>I can explain how search results are ranked</p> <p>I can recognise why the order of results is important, and to whom</p>	<p>I can use variables to control an output.</p> <p>I can identify and correct bugs in a program.</p> <p>I can refine a program to improve its efficiency.</p> <p>From DT... I know that mechanical and electrical systems have an input, process and output.</p>

	<p>I can create a spreadsheet to plan an event</p> <p>I can choose suitable ways to present data</p>		<p>reasons for choosing it.</p> <p>I can make use of the templates, e.g. letter, flyer, brochure to improve the layout of my work.</p> <p>I can change the layout of text by adding and removing columns.</p> <p>I can insert footnotes and endnotes to begin to reference my work.</p>	<p>placeholder to create a hole in an object.</p> <p>I can choose 3D shapes to create a model of a real-world object.</p> <p>I can plan and construct a 3D model, decide how it can be improved and modify my model to improve it.</p>	<p>I can recognise how we communicate using technology</p> <p>I can evaluate different methods of online communication</p>	<p>I know how more complex electrical circuits and components can be used to create functional products</p> <p>I know how to program a computer to monitor changes in the environment and control their products</p>
Vocabulary	<p>Spreadsheet, cell reference, data item, formatting cells, formulas</p>	<p>Variables, simulation, 'use-modify-create' model, letters (strings), event</p>	<p>Formality, template, footnote, endnote, reference, bibliography</p>	<p>CAD (Computer Aided Design), workplane, orthographic, floorplan, prototype, scaling</p>	<p>Search engine, refine, address bar, web crawlers, index, rank, influence, communication, privacy, information security</p>	<p>Analogue, digital, selection, LEDs, sensor, trigger, audio, visual, device</p>