



Computing Curriculum Plan

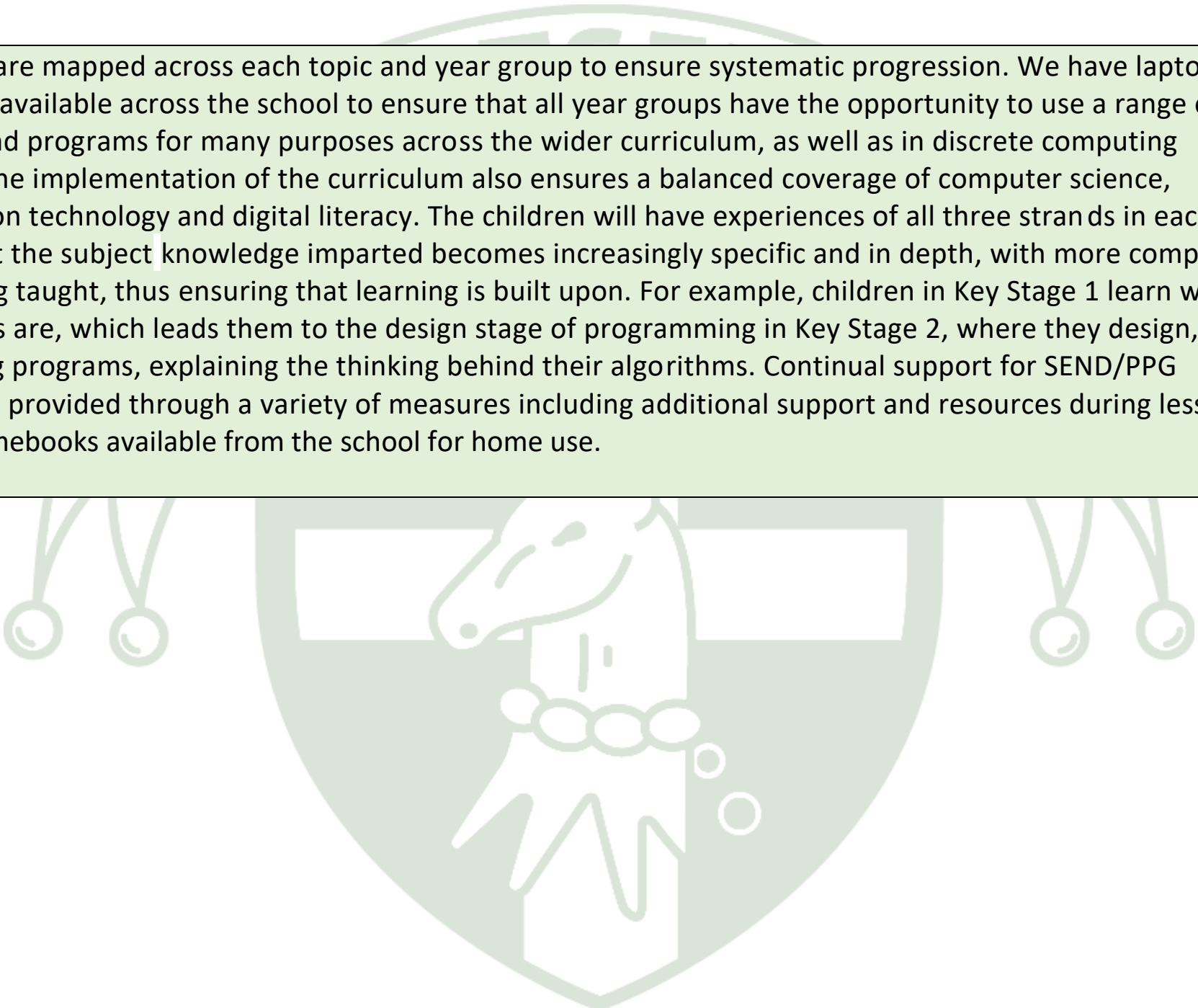


Intent Statement

At Hartsfield School our aim is to provide a high-quality computing education which equips children to use computational thinking and creativity to understand the world. Our children will be taught to use technology responsibly and carefully, being mindful of how their behaviour, words and actions can affect others. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. By the time they leave Hartsfield, children will have gained key knowledge and skills in the three main areas of the computing curriculum: computer science (programming and understanding how digital systems work), information technology (using computer systems to store, retrieve and send information) and digital literacy (evaluating digital content and using technology safely and respectfully). Our children will be taught Computing in a way that ensures progression of skills and follows a sequence to build on previous learning. Potential barriers to learning will be addressed through additional support and for children who have limited access to technology at home, there will be Chromebooks available from the school for home use.

Implementation Statement

Our curriculum is guided by the Early Years Framework and the National Curriculum for Computing. Please see the progression document for the milestones. At Hartsfield teachers use the 'Switched On: Computing' scheme, published by Rising Stars, as a starting point for the planning of their computing lessons. Knowledge



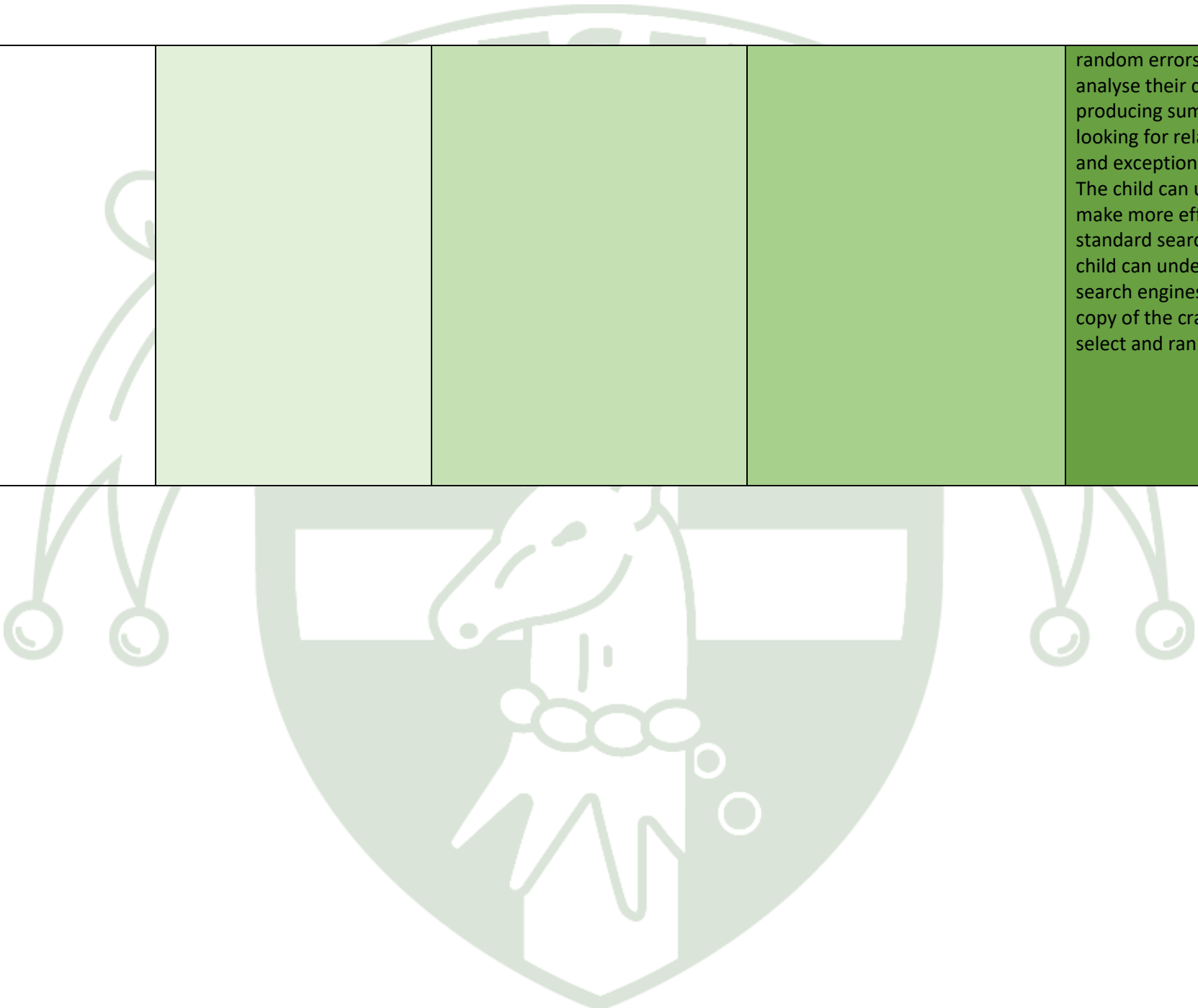
and skills are mapped across each topic and year group to ensure systematic progression. We have laptops and iPads available across the school to ensure that all year groups have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons. The implementation of the curriculum also ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes increasingly specific and in depth, with more complex skills being taught, thus ensuring that learning is built upon. For example, children in Key Stage 1 learn what algorithms are, which leads them to the design stage of programming in Key Stage 2, where they design, write and debug programs, explaining the thinking behind their algorithms. Continual support for SEND/PPG children is provided through a variety of measures including additional support and resources during lessons and Chromebooks available from the school for home use.

Whole School- Computing Skills Progression

Learning Objectives	EYFS	KS1	LKS2	UKS2
Computer science <i>Problem Solving</i> Understand what algorithms are. Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	There are no early learning goals that directly relate to computing objectives, though it is still expected that children will be introduced to appropriate technology and use it within their provision.	understand algorithms as sequences of instructions in everyday contexts. The child can take real-world problems and then plan a sequence of steps to solve these. The problems could be moving a Bee Bot from one point to another. The child can create programs as sequences of instructions when programming on screen.	The child can design and write a program using a block language, without user interaction. Programs could use pre-built sprites or ones designed by the child. Expect programs to include movement and dialogue	The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. The child can use logical reasoning to detect errors in algorithms and tackle each separately.
<i>Programming</i> Create and debug simple programs.		The child can create a Bee Bot program using a sequence of instructions before running it using the Go button. The length of the child's programs might be expected to increase over the course of the year. The child can create a simple program on screen, correcting any errors. The child can create a simple program on screen (e.g. using the Blue Bot app, ScratchJr or with prepared sprites and blocks in Scratch) with a particular goal or purpose in mind (e.g. drawing a shape or moving a sprite from one place to another). The child can debug any errors in their own code.	In on-screen programming, the child's program should include a sequence of commands or blocks in an appropriate order. The program could be a simple scripted animation and might include multiple sprites or movement. The child can create a program that produces output on screen, such a moving sprites or displayed text, e.g. a simple animation program. The child's program, typically written in Scratch, or similar, should include sequences of commands or blocks and some repetition. The child can write a program that accepts keyboard input and produces onscreen	The child can use sequence, selection, repetition and variables in programs. The child can give a coherent explanation of how data packets are routed from one computer to another on a separate network, which is also connected to the internet.

			output. In Scratch (or similar), the child can write a program that displays a question, accepts typed input, and responds in an appropriate way to what is typed.	
<i>Logical thinking</i> Use logical reasoning to predict the behaviour of simple programs.		The child can give explanations for what they think a program will do. The child can explain to the teacher, and to peers, what they think a program will do. This could be a program they or their peers have written, or it could be a familiar piece of software	The child can explain a simple, sequence-based algorithm in their own words. The algorithm could be one of their own, or a simple one with which they have been provided. The child can use logical reasoning to detect errors in programs. The child can give well-thought-through reasons for errors they find in programs and explain how they have fixed these	Students can give a coherent explanation of how data packets are routed from one computer to another on a separate network, which is also connected to the internet.
Digital Literacy Online safety. Using IT beyond school.		The child can keep themselves safe while using digital technology. The child can understand that they need to keep safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and that they should close the lid of a laptop (or similar action) if they find inappropriate images. The child can understand that information on the internet can be seen by others. The child should be aware that information stored on the web or transmitted via the internet is available to other people.	The child can recognise unacceptable behaviour when using digital technology. The child can decide whether digital content is relevant for a given purpose or question. The child can demonstrate that they can act responsibly when using computers.	The child can discuss the consequences of particular behaviours when using digital technology. The child can decide whether digital content is reliable and unbiased Children demonstrate they can think through the consequences of their actions when using digital technology. Identify principles underpinning acceptable use of digital technologies. Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.

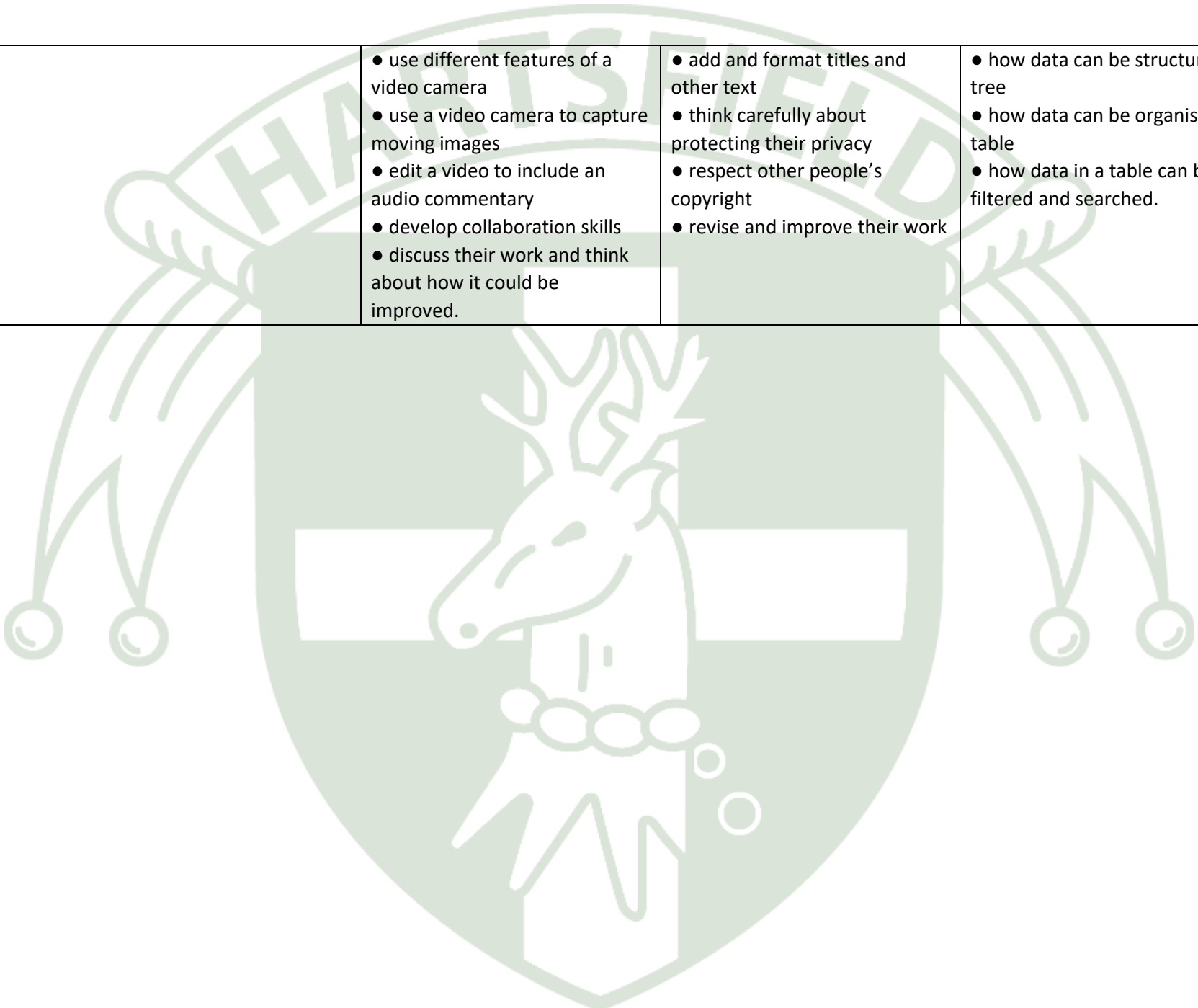
		<p>The child can understand what to do if they see disturbing content online at home or at school.</p> <p>The child can show an awareness of how IT is used for communication beyond school.</p> <p>They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should observe age restrictions on computer games.</p> <p>The child can understand that they should not share personal information online.</p>		
Information Technology – Creating content. Searching		<p>Students can use digital technology to store and retrieve content.</p> <p>Children can use a range of digital technologies to store and access digital content.</p> <p>The child can create original content using digital technology.</p>	<p>The child can use a range of software on laptop or tablet computers with some degree of independence.</p> <p>The child can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence. The child can use computers to collect information and present this to an audience.</p> <p>The child can search for information within a single site.</p> <p>The child can understand that search engines rank pages according to relevance.</p>	<p>The child can use and combine a range of programs on multiple devices.</p> <p>Working with text, audio, images or video, the child can analyse information, perhaps summarising this. They should evaluate the quality of the information, looking for bias or questioning assumptions that have been made.</p> <p>The child can evaluate the quality of numerical data, deciding the extent to which it is affected by systematic or</p>



				<p>random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions.</p> <p>The child can use filters to make more effective use of a standard search engine. The child can understand that search engines use a cached copy of the crawled web to select and rank results.</p>
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Year 1 Computing- Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Introduce		Revisit
• create and debug simple programs	Introduce		
• use logical reasoning to predict the behaviour of simple programs	Introduce		
• use technology purposefully to create, organise, store, manipulate and retrieve digital content	Introduce	Revisit	Revisit
• recognise common uses of information technology beyond school	Introduce	Revisit	Revisit
• use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.		Introduce	Revisit
Computing - Curriculum	Autumn	Spring	Summer
	We are Treasure Hunters <ul style="list-style-type: none"> • Learn how to program and debug programmable toys using simple algorithms. • Create an electronic card. We are TV chefs <p>Filming the steps of a recipe</p> <ul style="list-style-type: none"> • break down a process into simple, clear steps (an algorithm) 	We are Digital Artists <ul style="list-style-type: none"> • Be digital artists and create work inspired by other artists. We are publishers <p>Creating a multimedia eBook about our achievements</p> <ul style="list-style-type: none"> • plan a small multimedia eBook • choose and import images • record audio commentary 	We are Rhythmic <ul style="list-style-type: none"> • Use different media to create sound patterns using Scratch Jr and Garage Band We are detectives <p>Using data to solve clues</p> <ul style="list-style-type: none"> • how data can be structured as records with fields for information • how data can be organised into groups and subgroups

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| | <ul style="list-style-type: none">• use different features of a video camera• use a video camera to capture moving images• edit a video to include an audio commentary• develop collaboration skills• discuss their work and think about how it could be improved. | <ul style="list-style-type: none">• add and format titles and other text• think carefully about protecting their privacy• respect other people's copyright• revise and improve their work | <ul style="list-style-type: none">• how data can be structured as a tree• how data can be organised into a table• how data in a table can be filtered and searched. |
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Year 1 Computing- Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<p><u>Computer Science - Problem Solving</u> Understand what algorithms are.</p> <p>Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p>	<p>The child can understand that goals can be achieved by following a sequence of steps. The child can understand that simple, real-world problems, such as making a pizza or a smoothie, can be solved by following a sequence of steps in order.</p> <p>The child can program floor turtles using individual instructions according to a plan. The child can program a Bee Bot, or similar floor robot, one instruction at a time, pressing the movement buttons, then Go, then clearing at each step.</p>	<p>The child can understand algorithms as sequences of instructions in everyday contexts. The child can take real-world problems and then plan a sequence of steps to solve these. The problems could be moving a Bee Bot from one point to another, or making some simple food items like a sandwich, smoothie or pizza.</p> <p>The child can program floor turtles using sequences of instructions to implement an algorithm. The child can create a Bee Bot (or similar) program using a number of steps in order before pressing the Go button. The length of the child's programs might increase over the year.</p>	<p>The child can appreciate the need for precise and unambiguous instructions in algorithms. The child can use increasingly precise and unambiguous instructions in creating sequences of instructions. These should typically be for real-world problems such as recipes or moving a Bee Bot.</p> <p>The child can appreciate that programming a digital device involves commands in a formal language. The child can show some understanding of Bee Bot instructions being taken from a very specific, clearly defined language, in which each command produces a certain, predictable output. There should be some sense of the child developing an understanding of a programming language as a way in which people can give commands to digital devices.</p>
<p><u>Computer Science - Programming</u> Create and debug simple programs.</p>	<p>The child can give instructions, one at a time, to a floor turtle. The child can create a program for a Bee Bot by entering instructions one at a time, literally stepping through their code as they do. This level of interaction allows the child to correct bugs in their programs as they arise.</p>	<p>The child can give a sequence of instructions to a floor turtle. The child can create a Bee Bot program using a sequence of instructions before running it using the Go button. The length of the child's programs might be expected to increase over the course of the year.</p>	<p>The child can give a sequence of instructions to a floor turtle, correcting mistakes. The child can run programs on a Bee Bot as a quite lengthy sequence of instructions. The child can work out where bugs are in their program, reset the Bee Bot and enter corrected code. Typically, the child will need to have some way to record their programs before entering them, such as a whiteboard, Bee Bot instruction cards or the Blue Bot app.</p>

<p><u>Computer Science - Logical thinking</u> Use logical reasoning to predict the behaviour of simple programs.</p>	<p>The child can make predictions about what a program will do. The child can make a prediction of what they think a program will do next. This could be a program (perhaps for a Bee Bot) that they or their peers have written, or it could be a familiar piece of software (including computer games). The child could use an audio recorder or video camera to capture their predictions.</p>	<p>The child can give explanations for what they think a program will do. The child can explain to the teacher, and to peers, what they think a program will do. This could be a program they or their peers have written, or it could be a familiar piece of software (including computer games). The child could use an audio recorder or video camera to capture their explanations.</p>	<p>The child can give logical explanations for what they think a program will do. The child should be able to give carefully reasoned explanations of what a program will do under given circumstances, including some attempt at explaining why it does what it does. The program could be one they themselves have written or it could be a computer game or a familiar piece of software. The child could use an audio recorder or video camera to record their explanation.</p>
<p><u>Digital Literacy - E-safety</u> Use technology safely and respectfully.</p> <p>Keeping personal information private.</p> <p>Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</p>	<p>The child can acknowledge the need to stay safe when using technology. The child can understand that they need to be kept safe when using technology. E.g. They should be required to use filtered SafeSearch when looking for images on the web.</p> <p>The child can understand that some information should be kept private. The child should understand that some information is personal and should only be shared by those who they or their parents trust. E.g. The child should recognise that audio or video recordings they make in school are personal.</p> <p>The child can understand what to do if they see disturbing content online at school</p>	<p>The child can keep themselves safe while using digital technology. The child can understand that they need to keep safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and that they should close the lid of a laptop (or similar action) if they find inappropriate images.</p> <p>The child can understand that information on the internet can be seen by others. The child should be aware that information stored on the web or transmitted via the internet is available to other people. E.g. They should know that the images they find online can be found by others too, and that the queries they type in can be seen by those who run the search engine they use and the school's network.</p>	<p>The child can keep safe and show respect to others while using digital technology. The child can understand that they need to keep safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission.</p> <p>The child can start to understand what information about themselves should be kept private. The child should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who the child (or their parents) would trust. E.g. The child should recognise that</p>

	<p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher if this happens in school.</p>	<p>The child can understand what to do if they see disturbing content online at home or at school.</p> <p>The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They should know to tell their teacher or their parents if this happens.</p>	<p>audio or video recordings they make in school should not normally be posted online.</p> <p>The child can understand what to do if they have concerns about content or contact online. The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to Childline about this.</p>
<p><u>Digital Literacy - Using IT beyond school</u></p> <p>Recognise common uses of information technology beyond school.</p>	<p>The child can name some uses of IT beyond school. The child can mention some of the ways in which IT is used beyond school. Examples could be watching videos, creating paintings, typing stories, listening to music or audio books, sending messages.</p>	<p>The child can show an awareness of how IT is used for communication beyond school. The child can mention some of the ways in which IT is used to communicate beyond school. E.g. They might know that some people use social media such as Facebook, email, video calls or online greetings to say happy birthday to their friends.</p>	<p>The child can show an awareness of how IT is used for a range of purposes beyond school. The child can name a number of purposes for which IT is used beyond school. E.g. They might know that modern TVs use digital technology, that books are often available in a digital format, that music is often recorded using computers and that people often communicate using computers these days.</p>
<p><u>Information Technology - Creating Content</u></p> <p>Use technology purposefully to organise, store and retrieve digital content.</p>	<p>The child can store content on digital devices. The child can use a range of digital technologies to store digital content. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking,</p>	<p>The child can use digital technology to store and retrieve content. The child can use a range of digital technologies to store and access digital content. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card.</p>	<p>The child can use digital technology to organise, store and retrieve content</p> <p>The child can use a range of digital technologies to store, access and organise digital content. They can use a laptop computer, tablet or smartphone to help organise content, such as by moving this between one document and another or by moving content within the file system or on a document. Projects might</p>

Use technology purposefully to create and manipulate digital content.

creating content for an e-book or an audio book, creating a greetings card.

The child can create content on a **digital device**. The child can create their own original digital content using handheld devices. These would typically be digital cameras, video cameras and audio recorders, but the equivalent apps on a smartphone or tablet might be used.

Projects might include videoing one another cooking or making recordings for an audio book.

The child can create original content using digital technology. The child can create their own original digital content using a range of technologies. These might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders. Projects might include videoing one another cooking, developing an e-book or an audio book, creating a greetings card. Look for some indication of the child's creativity in this work.

include videoing one another cooking, developing an e-book or an audio book, creating a greetings card.

The child can create and edit original content using digital technology. The child can create and edit their own original digital content using a range of technologies. Creation technology might include laptop computers, tablets, smartphones, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include videoing one another cooking, developing an e-book, an audio book, creating a greetings card. Look for indication of the child's creativity in this work as well as evidence that they have edited content.

Year 2 Computing- Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Revisit		
• create and debug simple programs	Revisit		
• use logical reasoning to predict the behaviour of simple programs	Revisit		
• use technology purposefully to create, organise, store, manipulate and retrieve digital content		Revisit	Revisit
• recognise common uses of information technology beyond school	Revisit	Revisit	Revisit
• use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Revisit	Revisit	Revisit

Computing - Curriculum	Autumn	Spring	Summer
	<p>We are Games Testers</p> <ul style="list-style-type: none"> • What makes a good game? • Research a sample of easy games. • Understand that computers can be used to create games. • Suggest a range of improvements which could be made to a game. <p>We are Astronauts.</p> <ul style="list-style-type: none"> • Consider previous use of simple programmable toys. • Develop an understanding of what is needed in a set of simple instructions. • Create simple algorithms to instruct and direct. • Understand how to change and improve algorithms. • Self-assess. 	<p>Wordprocessing</p> <p>Use BBC Bitesize Dance Mat Typing to practise wordprocessing skills.</p> <p>We are Researchers</p> <ul style="list-style-type: none"> • Use safe methods to find things out. • To understand how to make detailed and safe searches on a search engine. • Be able to use mind mapping software. • Begin to understand how search engines can influence users. • Use Google Slides and Kiddle search engine to research and create a presentation. 	<p>We are photographers</p> <ul style="list-style-type: none"> • Understand safe use of photographs on the internet. • Recognise what makes a good photograph. • Take photographs. • Review, edit and manipulate their own images. <p>We are Zoologists</p> <ul style="list-style-type: none"> • Collect data about insects. • Edit and organise insect photos. • Create graphs from data and answer questions.

Year 2 Computing- Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<p><u>Computer Science - Problem Solving</u> Understand what algorithms are.</p> <p>Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p>	<p>The child can recognise common sequences of instructions as examples of algorithms. These might include simple recipes, but might also be procedures followed in class, instructions for moving around the school or simple arithmetic operations.</p> <p>The child can program floor turtles using sequences of instructions to implement an algorithm. The child can create Bee Bot programs using sequences of instructions, perhaps planning these first using whiteboards or Bee Bot instruction cards.</p>	<p>The child can recognise that common sequences of instructions or sets of rules can be thought of as algorithms. Examples could include recipes, but might also be procedures or rules in class, spelling rules, simple arithmetic operations or number patterns.</p> <p>The child can program on screen using sequences of instructions to implement an algorithm. The child can create programs as sequences of instructions when programming on screen. Their program could be written using simple programming apps ScratchJr or Scratch, perhaps using pre-prepared blocks and sprites in this case.</p>	<p>The child can appreciate that some algorithms are more efficient than others. The child can think about everyday algorithms, such as classroom rules or procedures, or arithmetic operations, and look for easier or faster ways to get things done. The child can create programs for computers and look for other ways to do the same thing, deciding which way would be better.</p> <p>The child can recognise that an algorithm can be implemented in more than one programming language, e.g. taking an algorithm written for the Bee Bot and running it on the Blue Bot app, in ScratchJr and in Scratch. The child should be able to explain some of the differences between these languages.</p>
<p><u>Computer Science - Programming</u> Create and debug simple programs.</p>	<p>The child can write a program to control a floor turtle using a sequence of instructions to move it from one place to another or to trace out a simple shape or route. Expect the child's programs to increase in length and complexity as the year progresses.</p>	<p>The child can create a simple program on screen, correcting any errors. The child can create a simple program on screen (e.g. using the Blue Bot app, ScratchJr or with prepared sprites and blocks in Scratch) with a particular goal or purpose in mind (e.g. drawing a shape or moving a sprite from one place to another). The child can debug any errors in their own code.</p>	<p>The child can create more complex programs on screen, correcting any errors. The child can create more complex programs on screen (e.g. using ScratchJr or Scratch) with a particular goal or purpose in mind (e.g. drawing compound shapes, making a simple scripted animation or modifying someone else's program).</p>
<p><u>Computer Science - Logical thinking</u> Use logical reasoning to predict the behaviour of simple programs.</p>	<p>The child can give explanations for what they think a program will do. This could be a program they or their peers have written, or it could be a familiar piece of software (including computer games).</p>	<p>The child can give logical explanations of what a program will do under given circumstances, including some attempt at explaining why it does what it does. The program could be one they</p>	<p>The child can work out some of the underlying algorithm by experimenting with a program while it runs. The child can take a simple game or piece of application software and reverse engineer at least some of the steps or rules that</p>

	The child could use an audio recorder or video camera to capture their explanations.	themselves have written or it could be a computer game or a familiar piece of software . The child could use an audio recorder or a video camera to record their explanations.	were present in the underlying algorithm . <i>E.g. When text is selected and the B button is clicked, the text should show as bold; when lives reach zero and health drops to zero, show game over and stop the game.</i>
<u>Digital Literacy - E-safety</u> Use technology safely and respectfully. Keeping personal information private. Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	<p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know that not all games are suitable for children, that they should close the lid of a laptop (or similar action) if they find inappropriate images and that files attached to some emails can cause harm.</p> <p>The child can understand that information on the internet can be seen by others. The child should be aware that information stored on the web, or transmitted via the internet, is available to other people. E.g. They should know that photos they take and upload can be seen by anyone who has the right username and password, by those who operate the computers on which they're stored, those running the school network and possibly others too. The child can understand what to do if they see disturbing content online at home or at school. The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, which might disturb them or other children. They</p>	<p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and that they should close the lid of a laptop (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should observe age restrictions on computer games.</p> <p>The child can understand that they should not share personal information online. The child should understand that personal information should be kept private: it should not be posted online to a public audience and should only be shared privately with those who they (or their parents) would trust. E.g. The child should recognise that photos they take in school should not normally be posted to the open web. They should know that photos taken with smartphones often</p>	<p>The child should know that they need to keep themselves safe when using digital technology. E.g. They should know to use filtered SafeSearch when looking for images on the web and that they should close the screen (or similar action) if they find inappropriate images. They should know to respect others' rights, including privacy and intellectual property when using computers, so should not look at someone else's work or copy it without permission and acknowledgement. They should know that emails can have files attached that could harm their computer. They should know that digital photos sometimes contain hidden (meta)data that can reveal where the photo was taken.</p> <p>The child can show some understanding of broader issues around online privacy. The child might discuss how digital photos can contain hidden information about where they were taken (metadata) or be searched for faces. They can show they are aware that information on computers is likely to remain available for a very long time and cannot easily be removed. They might discuss how their use of the web, searches and email can be monitored by those who provide the services and those who run computer networks.</p>

	<p>should know to tell their teacher or their parents if this happens.</p>	<p>contain hidden information about where the photo was taken.</p> <p>The child can understand what to do if they have concerns about content or contact online. The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images, if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this.</p>	<p>The child can have a range of strategies for dealing with concerns over content or contact online. The child should know to close the laptop lid or turn the tablet over if they find content, such as inappropriate images; if someone they don't trust contacts them online; if someone makes inappropriate contact online. They should know to tell their teacher or their parents if this happens, and be aware that they could talk to another trusted adult or to ChildLine about this. They should be aware that they can report inappropriate contact or content to those running websites.</p>
<p><u>Digital Literacy - Using IT beyond school</u> Recognise common uses of information technology beyond school.</p>	<p>The child can mention some of the ways in which IT is used to communicate beyond school. E.g. The child might know that adults can share work and discuss ideas in online communities; that photos can be shared easily using digital technology; that the web is made up of information shared by people and organisations; that people use email for a range of purposes.</p>	<p>The child can name a number of purposes for which IT is used beyond school. The child might know that adults can share work and discuss ideas in online communities; that photos can be taken, edited and shared easily using digital technology; that the web is made up of information shared by people and organisations; that people use email for a range of purposes; that scientists use computers when collecting and analysing data.</p>	<p>The child can consider when digital technology leads to improvements or has the potential to make things worse. The child can take a critical stance towards technologies, considering ways in which it has improved things and balancing these with possible disadvantages. They might compare board games and computer games; digital photography with traditional film; using the library with accessing the web; sending a letter with sending an email.</p>
<p><u>Information Technology - Creating Content</u> Use technology purposefully to organise, store and retrieve digital content.</p>	<p>The child can store and retrieve content on digital devices. With a given purpose, the child can use a range of digital technologies to retrieve and store digital content. Technologies will typically include laptop computers, tablets and smartphones with access to the internet,</p>	<p>The child can store, organise and retrieve content on digital devices for a given purpose. Technologies will typically include laptop computers, tablets and smartphones with access to the internet, but the child might also be expected to use digital cameras, video cameras and</p>	<p>The child can show some understanding that different types of information are all stored in a digital format on computers. The child can give some explanation of how information is stored on computers and other digital devices, recognising that information must always be</p>

Use technology purposefully to create and manipulate digital content.

but the child might also be expected to use digital cameras, video cameras and audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.

The child can create original content for a given purpose using digital technology. Content-creation technology might include laptop computers, tablets, smartphones with **network** connections, digital cameras, video cameras and audio recorders. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts.

audio recorders (or the equivalent apps on a tablet or smartphone). Projects might include digital photography, searching for images online and creating image-based presentation slides.

The child can create and edit original content for a given purpose using digital technology. Content-creation technology might include laptop computers, tablets, smartphones with **network** connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content.

stored as **sequences** of numbers, irrespective of the original form of that information.

The child can create and edit original content for a given purpose using digital technology and paying attention to the intended audience. Content-creation technology might include laptop computers, tablets, smartphones with **network** connections, digital cameras, video cameras and audio recorders, although editing is likely to take place on laptops or tablets. Projects might include digital photography, creating image-based presentation slides, composing an email and creating simple charts. Look for some indication of the child's creativity in this work and evidence that they have edited content. The child should be able to explain how they have taken into account the needs of their intended audience.

Year 3 Computing- Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
<ul style="list-style-type: none"> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 	Introduce		
<ul style="list-style-type: none"> use sequence, selection, and repetition in programs; work with variables and various forms of input and output 	Introduce		
<ul style="list-style-type: none"> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 	Introduce		
<ul style="list-style-type: none"> understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration 			Introduce
<ul style="list-style-type: none"> use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 			Introduce
<ul style="list-style-type: none"> select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information 		Introduce	Revisit
<ul style="list-style-type: none"> use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 	Introduce	Revisit	Revisit

Computing - Curriculum	Autumn	Spring	Summer
	<p>Google Classroom</p> <ul style="list-style-type: none"> •Skills needed to access Google Classroom at home. •To independently log on to a laptop and log off correctly. <p>We are programmers</p> <ul style="list-style-type: none"> •Children create their own animation in Scratch. •Create an algorithm for an animated scene in the form of a storyboard •Write a program in Scratch •Correct mistakes in their animation. •Skills include making their characters move and switching costumes and back-drops. 	<p>Internet & Word processing skills</p> <ul style="list-style-type: none"> •to use Google docs •To search the internet safely, cut & paste images from the internet, to minimise & maximise windows •To resize and text-wrap images •page orientation, print preview, page border and print a finished document •To use learnt skills independently to create their own document <p>We are who we are.</p> <p>Creating presentations about ourselves using Google Slides</p> <ul style="list-style-type: none"> •create a series of presentations, including a narrated presentation •consider issues of trust and privacy when sharing information. •use Google Slides to create a presentation about ourselves. 	<p>We are Co-authors’.</p> <p>Creating a class wiki using Google sites</p> <ul style="list-style-type: none"> •Plan their class wiki •Use Wikipedia to find information • Create their class wiki using Google Sites. •Edit the class wiki •Edit Wikipedia •Review their work <p>We are opinion pollsters</p> <p>Create an online opinion poll using Google Forms</p> <ul style="list-style-type: none"> •Plan their survey on a topic •Develop questions for their survey •Create their online survey •Collect data online •Analyse and evaluate the data collected •Present the data

Year 3 Computing- Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<p><u>Computer Science - Problem Solving</u> Design, write and debug programs that accomplish specific goals.</p> <p>Controlling or simulating physical systems.</p> <p>Solve problems by decomposing them into smaller parts</p>	<p>The child can design and implement some aspects of a program using a block language, which can run automatically without user interaction. A typical program might be an animation to tell a joke or part of a story. Do not expect children at this level to control interaction between two sprites.</p> <p>The child can identify where a physical system has been simulated on screen, e.g. a ball bouncing on a bat or a car moving around a track.</p> <p>When working on a project, such as an animation, a video or a survey, the child can identify the different stages of the project and/or the resources they will need for their project.</p>	<p>The child can design and write a program using a block language, without user interaction. A typical program might be a scripted animation for a joke, part of a story. Programs could use pre-built sprites or ones designed by the child. Expect programs to include movement and dialogue. There may be more than one sprite in the animation.</p> <p>The child can experiment with some on-screen simulations of physical systems e.g. a ball bouncing on a bat or a car moving around a track.</p> <p>The child can plan a project. Working with the teacher and, perhaps, other children, the child can develop an outline plan for a project in computing, involving multiple steps and resources.</p>	<p>The child can design, write and debug a program using a block language, without user interaction. At this level, expect the child to have successfully debugged their animation programs, which would typically include movement, on-screen dialogue, sound, costume changes and multiple sprites. The child should be able to explain what bugs they found and how they fixed these.</p> <p>The child can develop simulations of simple physical systems, e.g. a simple tennis game or a racing car moving around a track. The child can discuss the limitations of their simulation.</p> <p>The child can work with others to complete a project. In working on a project, such as an animation, a video or a survey, the child can contribute effectively to a team to accomplish the main project outcomes.</p>
<p><u>Computer Science - Programming</u> Use sequence, selection and repetition in programs; work with variables.</p> <p>Work with various forms of input and output</p>	<p>The child can understand that programs are made up of sequences of instructions (ideally in code they have created themselves, but possibly that of their peers or programs they have been provided with).</p> <p>The child can identify the most common forms of input (e.g. keyboard and mouse/trackpad or touch screen) and</p>	<p>In on-screen programming, the child's program should include a sequence of commands or blocks in an appropriate order. The program could be a simple scripted animation and might include multiple sprites or movement.</p> <p>The child can create a program that produces output on screen, such as moving sprites or displayed text, e.g. a simple animation program.</p>	<p>In on-screen programming, the child can include sequences of commands or blocks. The child can include some repeating loops, typically using a 'forever' or 'while true' construction, or repetition for a fixed number of times.</p> <p>The child can write a program that produces output on screen (e.g. displayed text and moving sprites in a simple animation) as well as some sound.</p>

	output (screen and speakers) for a computer.		
<p><u>Computer Science - Logical thinking</u> Use logical reasoning to explain how some simple algorithms work.</p> <p>Use logical reasoning to detect and correct errors in algorithms and programs.</p> <p>Understand computer networks including the internet.</p> <p>Understand how networks can provide multiple services, such as the world wide web.</p>	<p>The child can predict what an algorithm will do. The child can explain what will happen when their algorithm is implemented.</p> <p>The child can spot errors in programs.</p> <p>The child can understand that information of many different sorts can be transmitted through computer networks including the internet.</p> <p>The child can explain that email is sent and received via servers connected to the internet.</p>	<p>The child can explain a simple, sequence based algorithm in their own words. The algorithm could be one of their own, or a simple one with which they have been provided.</p> <p>The child can use logical reasoning to detect errors in programs.</p> <p>The child can explain that any information has to be converted to numbers before it can travel through computer networks. The child should understand that this conversion happens according to an agreed system or code.</p> <p>The child should know that email messages are sent and received through servers connected to the internet. The child should know that Skype and other videoconferencing systems also work through the internet, but these services may be direct, peer-to-peer connections rather than via servers.</p>	<p>The child can give an explanation for a simple algorithm based on a sequence of instructions with some repetition (either 'forever' or for a fixed number of times). The algorithm could be one of their own, or a simple one with which they have been provided.</p> <p>The child can give well-thought-through reasons for errors they find in programs and explain how they have fixed these.</p> <p>The child can explain that any information has to be converted to numbers before it can travel through computer networks; these numbers are represented as binary (on/off or high/low) signals. The child should understand that this conversion happens according to an agreed system or code, and that a number of different systems are, or have been, used, e.g. Morse and unicode for text, bitmaps for images, pulse code modulation (PCM) encoding of audio.</p> <p>The child should demonstrate an understanding that the internet plays host to a range of different services including the web, email, online gaming, file sharing and instant messaging</p>
<p><u>Digital Literacy - E-safety</u> Use technology safely, respectfully and responsibly.</p>	<p>The child should know that they need to keep themselves safe when using digital technology</p>	<p>The child should know that they need to keep themselves safe when using digital technology.</p>	<p>The child can demonstrate that they act responsibly when using computers.</p> <p>The child can discuss the difference between acceptable and unacceptable behaviour when using digital technology in a range of contexts.</p>

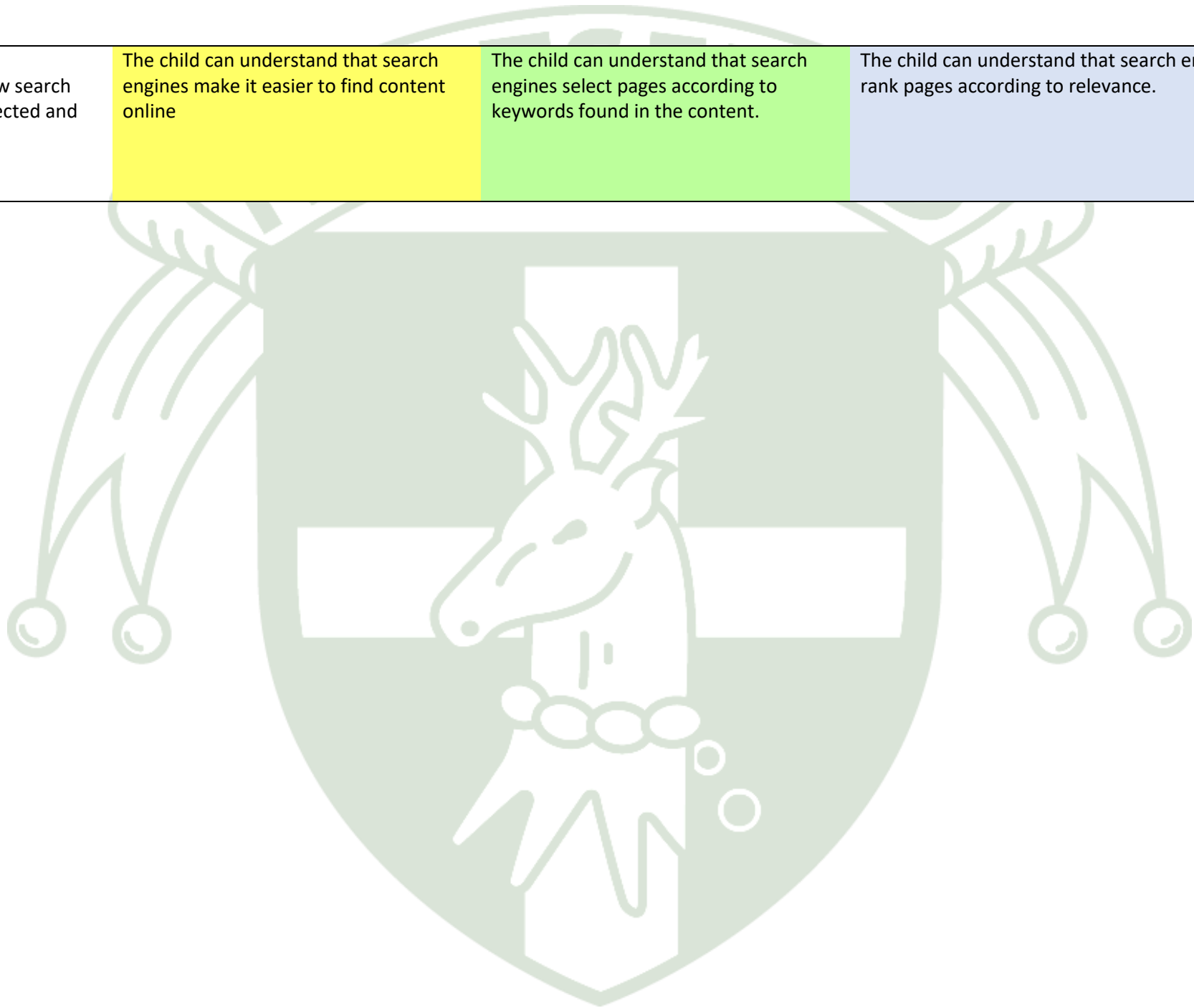
<p>Recognise acceptable/unacceptable behaviour.</p> <p>Know a range of ways to report concerns and inappropriate behaviour.</p> <p>Be discerning in evaluating digital content.</p> <p>Understand the opportunities networks offer for communication and collaboration.</p>	<p>The child can give examples of things that they should or should not do when using digital technology.</p> <p>Know who to talk to about inappropriate behaviour in school.</p> <p>The child can make choices about which web page they consider most useful.</p> <p>The child can use email to communicate with a classmate.</p>	<p>The child can recognise unacceptable behaviour when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour in school.</p> <p>The child can decide whether a web page is relevant for a given purpose or question.</p> <p>The child can use email and videoconferencing in class.</p>	<p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>The child can decide whether digital content is relevant for a given purpose or question.</p> <p>The child can use email and videoconferencing effectively for a given purpose.</p>
<p><u>Information Technology - Creating Content</u></p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices.</p> <p>Design and create a range of programs, systems and content that accomplish given goals.</p> <p>Collecting, analysing, evaluating and presenting data and information.</p>	<p>The child can use a range of software on laptop or tablet computers, with support when necessary</p> <p>The child can use software on a laptop or tablet to create digital content, with support if necessary.</p> <p>The child can use computers to collect or access information.</p>	<p>The child can use a range of software on laptop or tablet computers with some degree of independence.</p> <p>The child can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence.</p> <p>The child can use computers to collect information and present this to an audience.</p>	<p>The child can use multiple programs on laptop or tablet computers to achieve particular goals.</p> <p>With a given goal, the child can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence.</p> <p>The child can use computers to collect and evaluate information and present this to an audience.</p>
<p><u>Information Technology – Searching</u></p> <p>Use search technologies effectively.</p>	<p>The child can search for information on a web page.</p>	<p>The child can search for information within a single site.</p>	<p>The child can use a standard search engine to find information.</p>

Appreciate how search results are selected and ranked.

The child can understand that search engines make it easier to find content online

The child can understand that search engines select pages according to keywords found in the content.

The child can understand that search engines rank pages according to relevance.

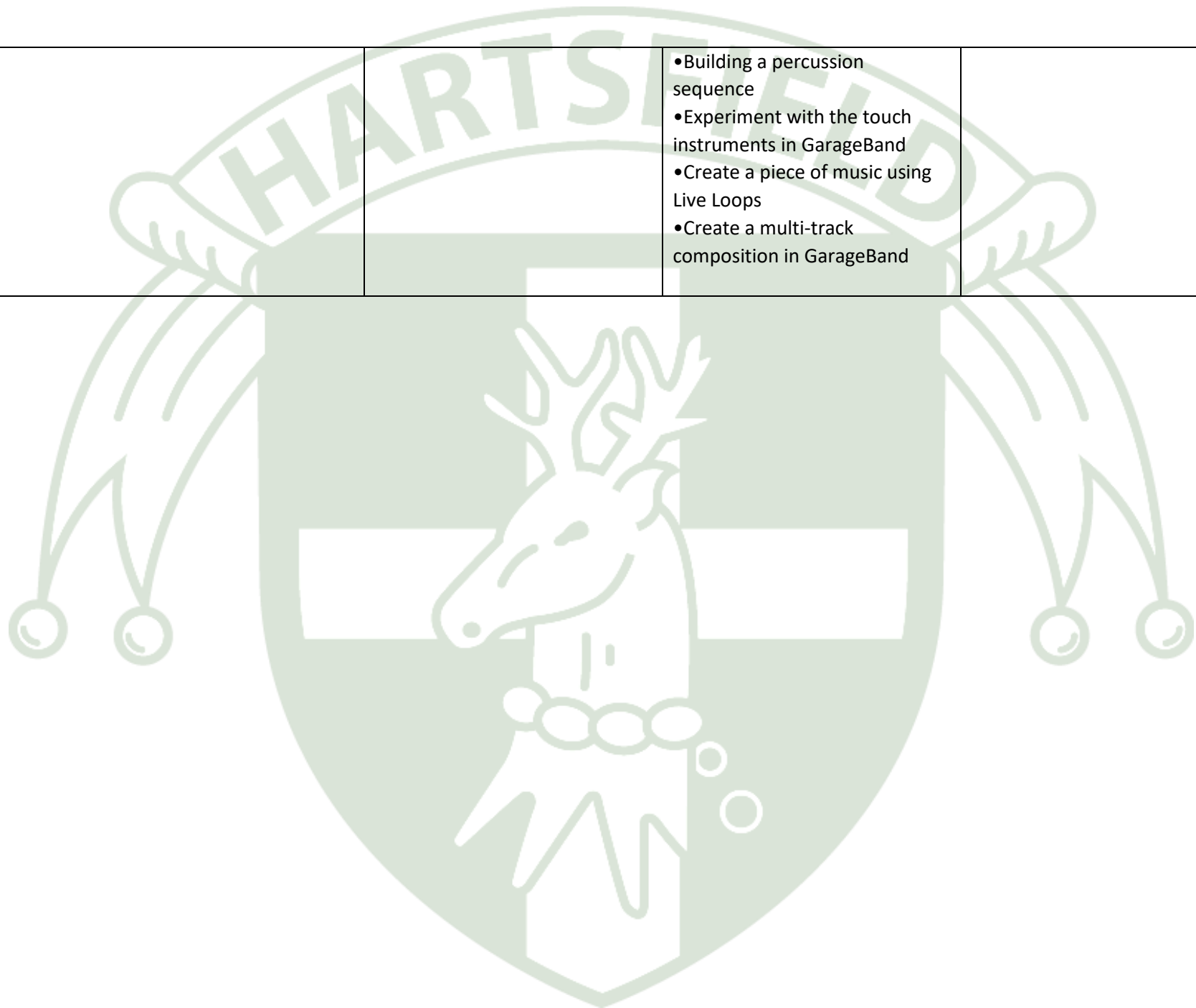


Year 4 Computing-Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
<ul style="list-style-type: none"> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 			Revisit
<ul style="list-style-type: none"> use sequence, selection, and repetition in programs; work with variables and various forms of input and output 	Revisit	Revisit	Revisit
<ul style="list-style-type: none"> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 	Revisit		Revisit
<ul style="list-style-type: none"> understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration 			Revisit
<ul style="list-style-type: none"> use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 	Revisit		
<ul style="list-style-type: none"> select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information 	Revisit	Revisit	Revisit
<ul style="list-style-type: none"> use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 		Revisit	Revisit

Computing - Curriculum	Autumn	Spring	Summer
	<p><u>Word Processing Skills</u></p> <ul style="list-style-type: none"> • To can format images for a Purpose. • To select, edit and manipulate text in various ways. • To find and use the different functions of the spellcheck tool. • To copy and paste. <p>We are Artists</p> <ul style="list-style-type: none"> •Creating simple tessellations using Google Draw •Creating more complex tessellations using Google Draw •Islamic-style art on Google Draw •Using Google Draw to create art in the later style of Bridget Riley 	<p><u>We are Meteorologists.</u></p> <ul style="list-style-type: none"> •Record the weather •What different equipment could you use? •Go outside and use equipment or other ideas to report on the weather. •Create equipment to record the weather. •Decide to place their equipment to check on every day. •Record the temperature in different areas •Take photos of different areas to compare •Rainfall and temperature every day at the same time •Create graphs to analyse. •Using the photos that were taken, create a PowerPoint adding the weather to each page. •Making links between the pictures and the temperatures. •Predict what the weather •Watch examples of weather forecasts. •Create a script and PowerPoint for their weather report. <p>We are Musicians</p>	<p><u>We are software developers</u></p> <ul style="list-style-type: none"> •Developing a simple educational game •Build a game prototype that asks a question and provides feedback •Develop the educational game to include repetition and variables •Improve the interface of the educational game <p><u>We are Bloggers</u></p> <ul style="list-style-type: none"> • Understand how to use blogs safely and responsibly • Understand how the Internet makes blogging possible • Write a blog post • Comment on a blog post • Add an image, audio or video to a blog post.

		<ul style="list-style-type: none">•Building a percussion sequence•Experiment with the touch instruments in GarageBand•Create a piece of music using Live Loops•Create a multi-track composition in GarageBand	
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Year 4 Computing- Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<p><u>Computer Science - Problem Solving</u> Design, write and debug programs that accomplish specific goals.</p> <p>Controlling or simulating physical systems.</p> <p>Solve problems by decomposing them into smaller parts</p>	<p>The child can design and implement some elements of a program using a block language to a given brief, including simple interaction.</p> <p>The child can implement some elements of a simulation on screen.</p> <p>The child can identify different ways to tackle a project.</p>	<p>The child can design and write a program using a block language to a given brief, including simple interaction.</p> <p>The child can develop their own simulation of a simple physical system on screen.</p> <p>The child can work with others to plan a project.</p>	<p>The child can design, write and debug a program using a block language to a given brief, including simple interaction.</p> <p>The child can develop their own simulation of a physical system on screen including interactivity.</p> <p>The child can work collaboratively to complete a project according to an agreed plan.</p>
<p><u>Computer Science - Programming</u> Use sequence, selection and repetition in programs; work with variables.</p> <p>Work with various forms of input and output</p>	<p>In on-screen programming, the child's program should include a sequence of commands or blocks in an appropriate order.</p> <p>The child can write a program to produce output on screen. The child can write a program in which sprites move on screen and/or text is displayed on screen.</p>	<p>The child's program, typically written in Scratch, or similar, should include sequences of commands or blocks and some repetition.</p> <p>The child can write a program that accepts keyboard input and produces on-screen output. In Scratch (or similar), the child can write a program that displays a question, accepts typed input and responds in an appropriate way to what is typed.</p>	<p>The child's program, typically written in Scratch, or similar, should include sequences of commands or blocks, some repetition and selection.</p> <p>In Scratch (or similar), the child could write a program that displays a question on screen or reads a question aloud, accepts a typed answer and then shows appropriate output on screen and plays an appropriate effect through the speakers.</p>
<p><u>Computer Science - Logical thinking</u> Use logical reasoning to explain how some simple algorithms work.</p>	<p>The child can explain a simple, sequence-based algorithm in their own words.</p> <p>The child can give well-thought-through reasons for errors they find in programs.</p>	<p>The child can explain an algorithm using sequence and repetition in their own words.</p>	<p>The child can explain an algorithm using sequence, repetition and selection in their own words.</p> <p>The child can give well-thought-through reasons for errors they find in programs and</p>

<p>Use logical reasoning to detect and correct errors in algorithms and programs.</p> <p>Understand computer networks including the internet.</p> <p>Understand how networks can provide multiple services, such as the world wide web.</p>	<p>The child can explain that any information has to be converted to numbers before it can travel through computer networks. The child should understand that this conversion happens according to an agreed system or code.</p> <p>The child can give a clear explanation of some of the differences between the internet and the web.</p>	<p>The child can give well-thought-through reasons for errors they find in programs and explain how they have fixed these.</p> <p>When working online, the child can explain that the information they send and receive is automatically broken down into packets of data, and that these sometimes take different routes across the internet.</p> <p>The child can understand how the internet makes the web possible. The child can give an explanation of how requests for web pages, and the HTML for those pages, are transmitted via the internet.</p>	<p>can explain, again using clear and logical reasoning, how they have fixed these.</p> <p>The child should show an awareness that their emails, requests for web pages and the contents of those pages, can be viewed by others, e.g. the school's network manager or internet provider. They might also show an awareness of when content is encrypted (e.g. passwords or HTTPS web traffic).</p> <p>The child can give an explanation of how HTTP GET requests and responses are transmitted via the internet, and show some awareness of how URLs are made up.</p>
<p><u>Digital Literacy - E-safety</u></p> <p>Use technology safely, respectfully and responsibly.</p> <p>Recognise acceptable/unacceptable behaviour.</p> <p>Know a range of ways to report concerns and inappropriate behaviour.</p> <p>Be discerning in evaluating digital content.</p> <p>Understand the opportunities networks</p>	<p>The child can use digital technology safely and show respect for others when working online.</p> <p>The child can recognise unacceptable behaviour when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour in school.</p> <p>The child can decide whether a web page is relevant for a given purpose or question.</p> <p>The child can contribute to a shared wiki.</p>	<p>The child can demonstrate that they can act responsibly when using computers.</p> <p>The child can understand the difference between acceptable and unacceptable behaviours when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>The child can decide whether digital content is relevant for a given purpose or question.</p>	<p>The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can discuss the likely or possible consequences of particular behaviours when using digital technology in a range of contexts</p> <p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>The child can decide whether digital content is reliable and unbiased.</p> <p>The child can work collaboratively on a shared wiki, making changes to others' pages.</p>

offer for communication and collaboration.		The child can work collaboratively with classmates on a shared wiki.	
<u>Information Technology - Creating Content</u> Select, use and combine a variety of software (including internet services) on a range of digital devices. Design and create a range of programs, systems and content that accomplish given goals. Collecting, analysing, evaluating and presenting data and information.	The child can use a range of programs on a computer. The child can plan and execute a project in which they use software on a laptop or tablet to create digital content, with appropriate support if necessary. The child can use computers to collect numerical data with appropriate support, if necessary.	The child can use and combine a range of programs on a computer. With a given goal, the child can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence. The child can use computers to collect numerical data and present this to an audience	The child can use and combine a range of programs on multiple devices. With a given goal and a known audience in mind, the child can plan and execute a project in which they use software on a laptop or tablet to create digital content with some degree of independence. The child can use computers to collect numerical data , analyse this (typically in a spreadsheet) and present this to an audience.
<u>Information Technology – Searching</u> Use search technologies effectively. Appreciate how search results are selected and ranked.	The child can search for information within a single site. The child can understand that search engines select pages according to keywords found in the content.	The child can use a standard search engine to find information. The child can understand that search engines rank pages according to relevance.	The child can use filters to make more effective use of a standard search engine. The child can understand that search engines use a cached copy of the crawled web to select and rank results.

Year 5 Computing-Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Revisit		Revisit
• use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Revisit		Revisit
• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Revisit	Revisit	
• understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration		Revisit	Revisit
• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Revisit	Revisit	
• select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Revisit	Revisit	Revisit
• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		Revisit	Revisit

Computing - Curriculum	Autumn	Spring	Summer
	<p>We are Game Developers</p> <ul style="list-style-type: none"> • Word processing skills and using Google Classroom • Online safety • Design, programme and debug interactive games using Scratch. Lost in space & Maze game • Revise basic controls and programming in Scratch including Sprites, backgrounds, movement and sounds. • Create a ghost catching game • Create a chatbot game • Create a Scratch game suitable for a 5 year old 	<p>We are cryptographers</p> <ul style="list-style-type: none"> • be familiar with semaphore and Morse code • understand the need for private information to be encrypted • encrypt and decrypt messages in simple ciphers • appreciate the need to use complex passwords and to keep them secure • have some understanding of how encryption works on the Internet. 	<p>We are Architects</p> <p>Using Sketch Up</p> <ul style="list-style-type: none"> • Design of their own rooms. • Using the blank design worksheet. • Build their work space this lesson. • Create the room, adding a door way and a window. • Complete their room. • Evaluate and share their work. • Use PowerPoint to create information <p>We are adventure gamers Creating an interactive adventure using presentation software</p> <ul style="list-style-type: none"> • how to plan a non-linear presentation • to create text as part of a presentation • to add and edit images in a presentation • to use hyperlinks for navigation between the slides of a presentation • to record and add audio narration to a presentation • to use commenting tools to give feedback on a presentation.

Year 5 Computing- Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<u>Computer Science - Problem Solving</u> Design, write and debug programs that accomplish specific goals. Controlling or simulating physical systems. Solve problems by decomposing them into smaller parts	The child can design and write a program using a block language based on their own ideas. The child can understand that physical systems can be controlled by a computer. When given a complex problem or project, the child can identify the component parts of the problem or project and explain how they might tackle these in order to solve the original problem or complete the given project	The child can design, write and debug a program using a block language based on their own ideas. The child can experiment with computer control applications. The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified.	The child can design, write and debug a program using a block language based on their own ideas; the child can use iterative development to make improvements. The child can develop their own simple computer control application. The child can take a complex problem, identify component parts, use decomposition to break this problem down and then plan how they can solve the problem by working through the elements they have identified. They can then use their plan to solve the original problem.
<u>Computer Science - Programming</u> Use sequence, selection and repetition in programs; work with variables. Work with various forms of input and output	The child can use sequence and repetition in programs . The child can write a program that accepts keyboard input and produces on-screen output .	The child can use sequence, selection and repetition in programs . The child can write a program that accepts keyboard and mouse input and produces output on screen and through speakers.	The child can use sequence, selection, repetition and variables in programs . The child can show an awareness of the importance of good user- interface design when developing a program .
<u>Computer Science - Logical thinking</u> Use logical reasoning to explain how some simple algorithms work.	The child can predict the outcomes of a rule-based algorithm .	The child can explain a rule-based algorithm in their own words.	The child can give a clear and precise explanation of a rule-based algorithm .

<p>Use logical reasoning to detect and correct errors in algorithms and programs.</p> <p>Understand computer networks including the internet.</p> <p>Understand how networks can provide multiple services, such as the world wide web.</p>	<p>The child can spot errors in algorithms.</p> <p>The child can give some explanation of how the internet allows computers on different networks (e.g. at school and at home) to communicate with one another.</p> <p>The child can explain how a web page is transmitted in the form of HTML code</p>	<p>The child can use logical reasoning to detect errors in algorithms.</p> <p>The child can give a coherent explanation of how data packets are routed from one computer to another on a separate network, which is also connected to the internet.</p> <p>The child can explain how HTML is used to create a web page and how it is transmitted as packets of digital data over the internet.</p>	<p>The child can use logical reasoning to detect and correct errors in algorithms.</p> <p>The child can give a coherent explanation of how data packets are routed from one computer to another on a separate network, which is also connected to the internet, and how this routing would change if the network were to develop a fault.</p> <p>The child can explain some differences between static web pages written as simple HTML files and those generated from a database of content elements by content management systems such as WordPress, MediaWiki or Moodle.</p>
<p><u>Digital Literacy - E-safety</u></p> <p>Use technology safely, respectfully and responsibly.</p> <p>Recognise acceptable/unacceptable behaviour.</p> <p>Know a range of ways to report concerns and inappropriate behaviour.</p> <p>Be discerning in evaluating digital content.</p> <p>Understand the opportunities networks offer for communication and collaboration.</p>	<p>The child can demonstrate that they can act responsibly when using computers.</p> <p>The child can understand the difference between acceptable and unacceptable behaviour when using digital technology.</p> <p>Know who to talk to about concerns and inappropriate behaviour at home or in school.</p> <p>The child can decide whether digital content is relevant for a given purpose or question.</p>	<p>The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can discuss the consequences of particular behaviours when using digital technology..</p> <p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>The child can decide whether digital content is reliable and unbiased.</p> <p>The child can work collaboratively with classmates on a class website or blog.</p>	<p>The child can show that they can think through the consequences of their actions when using digital technology.</p> <p>The child can identify principles underpinning acceptable use of digital technologies</p> <p>Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.</p> <p>The child can form an opinion about the effectiveness of digital content.</p> <p>The child can provide constructively critical feedback to classmates in a class website or blog project.</p>

	The child can contribute to a class website or blog.		
<u>Information Technology - Creating Content</u> Select, use and combine a variety of software (including internet services) on a range of digital devices. Design and create a range of programs, systems and content that accomplish given goals. Collecting, analysing, evaluating and presenting data and information.	The child can use and combine a range of programs on a computer. The child can design and create programs on a computer. Working with text, audio, images or video, the child can evaluate the quality of the information, perhaps looking for bias or questioning assumptions that have been made, or considering the effectiveness of its presentation.	The child can use and combine a range of programs on multiple devices. The child can design and create programs on a computer in response to a given goal. Working with text, audio, images or video, the child can analyse information, perhaps summarising this. They should evaluate the quality of the information, looking for bias or questioning assumptions that have been made.	The child can select, use and combine a range of programs on multiple devices. The child can design and create programs on a computer in response to a given goal and paying attention to the needs of a known audience. Working with text, audio, images or video, the child can analyse information, perhaps summarising this or looking for common features or exceptions. They should evaluate the quality of the information, looking for bias or questioning assumptions that have been made.
<u>Information Technology – Searching</u> Use search technologies effectively. Appreciate how search results are selected and ranked.	The child can use a standard search engine to find information. The child can understand that search engines use a cached copy of the crawled web to select results.	The child can use filters to make more effective use of a standard search engine. The child can understand that search engines use a cached copy of the crawled web to select and rank results.	The child can use advanced search options to make more effective use of a standard search engine. The child can understand how search engines build a cached copy of the web using HTTP and web-crawler programs .

Year 6 Computing-Learning Objectives and Knowledge Overview

Computing - Learning Objectives	Autumn	Spring	Summer
<ul style="list-style-type: none"> design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 	Revisit		
<ul style="list-style-type: none"> use sequence, selection, and repetition in programs; work with variables and various forms of input and output 	Revisit		
<ul style="list-style-type: none"> use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs 	Revisit		
<ul style="list-style-type: none"> understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration 		Revisit	Revisit
<ul style="list-style-type: none"> use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 		Revisit	Revisit
<ul style="list-style-type: none"> select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information 		Revisit	Revisit
<ul style="list-style-type: none"> use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. 		Revisit	Revisit
Computing - Curriculum	Autumn	Spring	Summer
	Scratch revision unit <ul style="list-style-type: none"> Revise Scratch learnt in previous year groups Conversation animation between sprites 	Excel Spreadsheets <ul style="list-style-type: none"> Enter data and formulae into a spreadsheet 	We Are Publishers & general word-processing skills <ul style="list-style-type: none"> Develop skills using Microsoft Word to design their Yearbook.

- Maths game including a score
- Maze game – adding additional levels
- 'Crossy Road' game
- Christmas themed scratch project

- Order and present data based on calculations
- Add, edit and calculate data
- Use a spreadsheet to solve problems
- Plan and calculate a spending budget
- Design a spreadsheet for a specific purpose

We are connected

Use the school's blogging platform to explore issues related to social media.

- Decide on guidelines to follow when debating a controversial topic
- Research the chosen topic, thinking carefully about how to decide whether information is reliable or not
- Argue their own perspective on the topic, backing up their views with relevant sources
- Show respect and tolerance as they respond to others' views
- Think about how reliable sources of information are
- Discuss online bullying

- Design your own yearbook.
- Overall structure and design of the yearbook.
- Plan the design and content for your page.
- Collect the photos, text and other media needed for your page.
- Design pages – make sure everything fits well together.
- Ask others to check your work and give you feedback.
- Look through the whole yearbook, spotting mistakes and making suggestions, before the final version is printed off.

Year 6 Computing-Progression and Assessment

Learning Objective	ARE-	ARE=	ARE+/ARE++
<u>Computer Science - Problem Solving</u> Design, write and debug programs that accomplish specific goals. Controlling or simulating physical systems. Solve problems by decomposing them into smaller parts	The child can design and write a program using a second programming language based on their own ideas. The child can experiment with computer control applications. The child can plan a solution to a problem using decomposition.	The child can design, write and debug a program using a second programming language based on their own ideas. The child can design, write and debug their own computer control application. The child can solve problems using decomposition, tackling each part separately.	The child can design, write and debug a program using a second programming language based on their own ideas, using iterative development to make improvements. The child can design, write and debug own computer control application, using iterative development to make improvements. The child can apply decomposition to help understand complex systems.
<u>Computer Science - Programming</u> Use sequence, selection and repetition in programs; work with variables. Work with various forms of input and output	The child can use sequence, selection and repetition in programs . The child can write a program that accepts keyboard and mouse or touch screen input and produces output on screen and through speakers.	The child can use sequence, selection, repetition and variables in programs . The child can write a program that accepts inputs other than keyboard and mouse and produces outputs other than screen or speakers.	The child can use sequence, selection, r The child can use principles of good user- interface design, including accessibility, when developing programs .
<u>Computer Science - Logical thinking</u> Use logical reasoning to explain how some simple algorithms work.	The child can explain an algorithm using sequence, repetition and selection in their own words.	The child can give clear and precise logical explanations of a number of algorithms .	The child can use logical reasoning to explain how more complex algorithms work.

<p>Use logical reasoning to detect and correct errors in algorithms and programs.</p> <p>Understand computer networks including the internet.</p> <p>Understand how networks can provide multiple services, such as the world wide web.</p>	<p>The child can use logical reasoning to detect errors in algorithms.</p> <p>The child can understand that computers can communicate through network technologies other than the internet.</p> <p>The child can understand the difference between a domain name and an IP address.</p>	<p>The child can use logical reasoning to detect and correct errors in algorithms (and programs).</p> <p>The child can understand how mobile phone or other networks operate.</p> <p>The child can understand how domain names are converted into IP addresses on the internet.</p>	<p>The child can suggest ways in which the efficiency of algorithms and programs can be improved.</p> <p>The child can understand differences between network technologies.</p> <p>The child can show awareness of some of the security implications of DNS lookups.</p>
<p><u>Digital Literacy - E-safety</u></p> <p>Use technology safely, respectfully and responsibly.</p> <p>Recognise acceptable/unacceptable behaviour.</p> <p>Know a range of ways to report concerns and inappropriate behaviour.</p> <p>Be discerning in evaluating digital content.</p> <p>Understand the opportunities networks offer for communication and collaboration.</p>	<p>The child can demonstrate that they can act responsibly when using the internet.</p> <p>The child can discuss the consequences of particular behaviours when using digital technology.</p> <p>Know how to report concerns and inappropriate behaviour in a range of contexts.</p> <p>The child can decide whether digital content is reliable and unbiased.</p> <p>The child can use online tools to plan a collaborative project.</p>	<p>The child can show that they can think through the consequences of their actions when using digital technology.</p> <p>The child can identify principles underpinning acceptable use of digital technologies.</p> <p>Know a range of ways to report concerns and inappropriate behaviour in a variety of contexts.</p> <p>The child can form an opinion about the effectiveness of digital content.</p> <p>The child can use online tools to plan and carry out a collaborative project.</p>	<p>The child can consider critically some of the wider implications of the use of digital technology.</p> <p>The child can consider questions of ethics and morality in relation to digital technology.</p> <p>Consider how they would determine the best way to address particular concerns or inappropriate behaviour.</p> <p>The child can consider principles they can use to evaluate digital content.</p> <p>The child can use online tools to plan, carry out and evaluate a collaborative project.</p>

<p><u>Information Technology</u> <u>- Creating Content</u></p> <p>Select, use and combine a variety of software (including internet services) on a range of digital devices.</p> <p>Design and create a range of programs, systems and content that accomplish given goals.</p> <p>Collecting, analysing, evaluating and presenting data and information.</p>	<p>The child can use and combine a range of programs on multiple devices.</p> <p>The child can plan and design a system with multiple, interrelated components with a given goal in mind.</p> <p>The child can analyse numerical data (typically using a spreadsheet) perhaps producing summary statistics, looking for relationships, trends and exceptions.</p>	<p>The child can select, use and combine a range of programs on multiple devices.</p> <p>The child can plan, design and implement a system with multiple, interrelated components with a given goal in mind.</p> <p>The child can evaluate the quality of numerical data, deciding the extent to which it is affected by systematic or random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions.</p>	<p>The child can show some understanding of the differences between, and relative merits of, different applications, operating systems and hardware.</p> <p>The child can plan, design and implement a system with multiple, interrelated components with a given goal and a known audience in mind.</p> <p>The child can evaluate the quality of numerical data, deciding the extent to which it is affected by systematic or random errors. They should analyse their data, perhaps producing summary statistics, looking for relationships, trends and exceptions. They should provide an interpretation of their data and discuss the limitations of their findings.</p>
<p><u>Information Technology</u> <u>– Searching</u></p> <p>Use search technologies effectively.</p> <p>Appreciate how search results are selected and ranked.</p>	<p>The child can appreciate that a range of different search technologies are available.</p> <p>The child can demonstrate some awareness of the Page Rank algorithm, explaining that the ranking of a page is determined largely on the basis of the links pointing to that page in the engine's cached copy of the web.</p>	<p>The child can make use of a range of search engines appropriate to finding information that is required.</p> <p>The child can demonstrate some awareness of the Page Rank algorithm, explaining that the quality of a page is determined largely on the basis of the number and quality of links pointing to that page in the engine's cached copy of the web, and that quality is itself determined recursively through Page Rank.</p>	<p>The child can appreciate that much information cannot easily be found using search engines.</p> <p>The child should be aware of the Page Rank algorithm used for ranking search results, but should also be able to discuss other signals used in ranking algorithms, such as bounce back rates, accessibility indicators, localisation and personalisation of search results.</p>