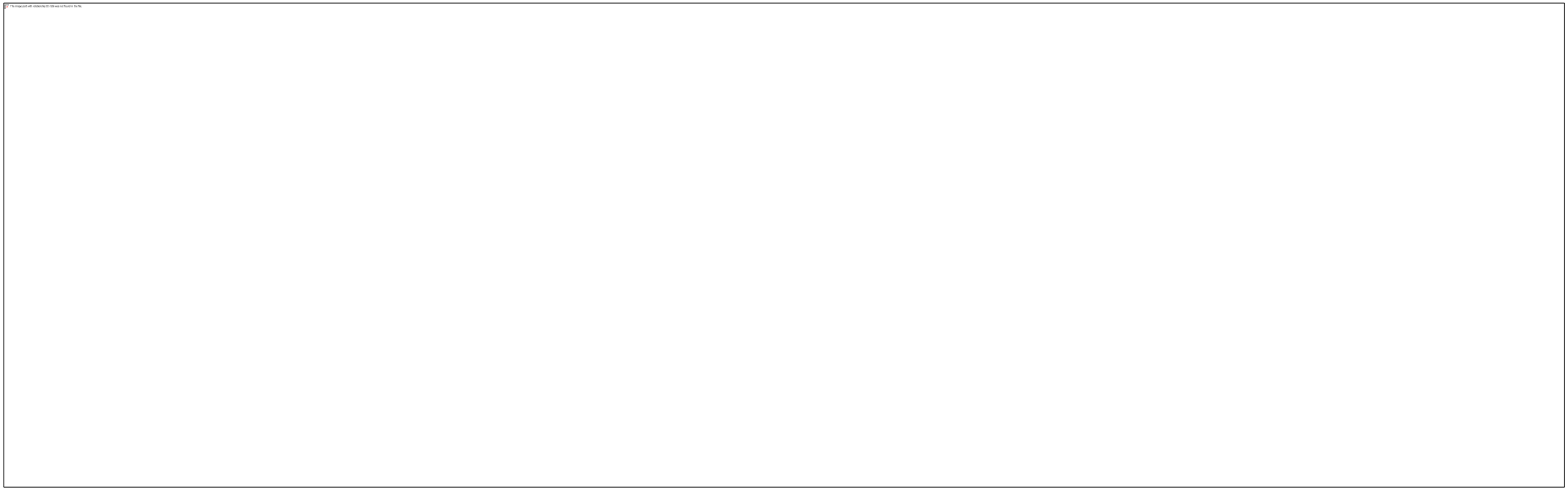

Computing Curriculum Map

Intent

In line with the 2014 National Curriculum for Computing, our aim is to provide a high-quality computing education which equips children to use computational thinking and creativity to understand and change the world. The curriculum will teach children key knowledge about how computers and computer systems work, and how they are designed and programmed. Learners will have the opportunity to gain an understanding of computational systems of all kinds, whether or not they include computers.

During their time at West Heath, they 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). The objectives within each strand support the development of learning across the key stages, ensuring a solid grounding for future learning and beyond.

Implementation

At West Heath, computing is taught using a blocked curriculum approach. This ensures children are able to develop depth in their knowledge and skills over the duration of each of their computing topics. Teachers use National Centre for Computing Education (NCCE) guidance and resources, as a starting point for the planning of their computing lessons, which are often richly linked to engaging contexts in other subjects and topics. Knowledge and skills are mapped across each topic and year group to ensure systematic progression.

We have sets of year group laptops, iPads and a variety of other equipment 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. Employing cross-curricular links motivates pupils and supports them to make connections and remember the steps they have been taught.

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.

Impact

Our approach to the curriculum results in a fun, engaging, and high-quality computing education. Evidence is used to feed into teachers' future planning, and as a topic-based approach continues to be developed, teachers are able to revisit misconceptions and knowledge gaps in computing when teaching other curriculum areas. This supports varied paces of learning and ensures all pupils make good progress.

Much of the subject-specific knowledge developed in our computing lessons equip pupils with experiences which will benefit them in secondary school, further

education and future workplaces. From research methods, use of presentation and creative tools and critical thinking, computing at West Heath gives children the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.

Year 1						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Overarching	**Time Travel**		**Earth**		**Amazing People**	**Land of Hope and Glory**
Topic	**Toys through Time**	**WW1 / Remembrance**	**The seaside**	**The Seasons**	**Intrepid Explorers**	**People who help us**
ICT Unit	TECHNOLOGY AROUND US	CREATING MEDIA – DIGITAL PAINTING	PROGRAMMING A - MOVING A ROBOT	GROUPING DATA	CREATING MEDIA – DIGITAL WRITING	PROGRAMMING B - ANIMATIONS
Resource	paintz.app	Microsoft paint	Bee-Bot	Microsoft PowerPoint	Microsoft Word	ScratchJr
N Curr	- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content **(INFORMATION TECHNOLOGY)** - Recognise common uses of information technology beyond school - Use technology safely & respectfully, keeping personal information private; identify where to go for help & support when they have concerns about content or contact on the internet or other online technologies. **(DIGITAL LITERACY)**	- Use technology purposefully to create, organise, store, manipulate, and retrieve digital content **(INFORMATION TECHNOLOGY)**	- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions - Create & debug simple programs. - Use logical reasoning to predict behaviour of simple programs -Recognise common uses of information technology beyond school **(COMPUTER SCIENCE)**	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)** -Use technology safely and respectfully. **(DIGITAL LITERACY)**	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)** - Use technology safely and respectfully, keeping personal information private **(DIGITAL LITERACY)**	- Understand what algorithms are; how they are implemented as programs on digital devices; & that programs execute by following precise & unambiguous instructions - Create & debug simple programs. - Use logical reasoning to predict the behaviour of simple programs -Recognise common uses of info technology beyond school **(COMPUTER SCIENCE)**
HEAD (Knowledge)	Technology can help us. Examples of technology. Choices are made when we use technology. What rules are needed when we use technology Name the main parts of a computer	How to switch devices on How to use a username and password to access a device (generic class log in for KS1) How to paint, using computers What different freehand tools do The differences between painting on a computer and on paper	Know the function of each button. Use precise directional language. How to program the floor robot to move and enable it to follow a clear (fixed) command in a precise and repeatable way. Know how a program can be debugged.	Objects have many different labels that can be used to put them into groups. An object can fit into more than one group depending on the context Objects can be described in different ways	How to log on How the rules keep us safe How to add and remove text How to change the appearance of text	How characters on-screen can be moved using commands. Blocks can be joined together in ScratchJr and a Start block is needed to run programs. Follow given algorithms to create simple programs. How to change values and identify the effect on a block of changing a value. Each sprite can be programmed by creating an algorithm.

HANDS **(Skills)**	<u>use a mouse indifferent ways</u> - to open a program - click and drag to move objects on screen - to create a picture <u>use the keyboard to type and edit</u> - type name - save work - open work - use arrows to move the cursor - delete letters <u>Create a picture</u> - use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape;	- make marks on a screen and explain which tools I used - draw lines on a screen and explain which tools I used - use the paint tools to draw a picture - use the shape tool and the line tools - make marks with the square and line tools <u>make careful choices when painting a digital picture</u> - choose appropriate shapes - make appropriate colour choices <u>create a picture in the style of an artist</u> - choose appropriate paint tools and colours to recreate the work of an artist - make dots of colour on the page - change the colour and brush sizes -explain why I chose the tools I used - compare painting a picture on a computer and on paper	- explain what a given command will do - predict the outcome of a command on a device - match a command to an outcome and run a command on a device - combine forwards and backwards commands to make a sequence and compare them. - predict the outcome of a sequence involving forwards and backwards commands - combine four direction commands to make sequences - compare turns and experiment with move commands to move a robot - predict the outcome of a sequence involving up to four commands - plan a simple program - choose the order of commands in a sequence - debug maprogram - identify several possible solutions - plan two programs and use two different programs to get to the same place	name different objects and begin to experiment with placing them into different groups <u>label and match</u> label a group of objects describe objects using a abel match objects to groups <u>describing</u> describe an object describe a property find objects with similar properties <u>grouping and comparing</u> group objects group in more than one way record groupings	Identify, find and use keys on the keyboard to add and remove text - letters and numbers - spacebar - backspace - shift and cap lock - bold italic underline Use the cursor to select text for editing - double click - click and drag Use the ‘undo’ function	show that a series of commands can be joined together - use more than one block by joining them together - use a Start block in a program - run my program identify the effect of changing a value - find blocks that have numbers - change the value - say what happens when I change a value - show that a project can include more than one sprite - delete a sprite - add blocks to each of my sprites - design the parts of a project - create an algorithm for each sprite - use my algorithm to create a program - use sprites that match my design - add programming blocks based on my algorithm - test the programs I have created
HEART **(Values)**	Respect Honesty Empathy Collaboration Resilience Determination Excellence					

Year 2						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Time Travel		**Earth**		**Amazing People**	**Land of Hope & Glory**
Topic	**Great fire of London**	**Titanic**	**The UK**	**Africa**	**Charles Darwin**	**My Local Area**
ICT Unit	Computing Systems & Networks – Information Technology Around Us	Creating Media - Digital Photography	Making Music	Pictograms	Programming A – Robot algorithms	Programming – Programming Quizzes
Resource	Microsoft PowerPoint	Digital Camera (tablet/iPad)	Chrome Music Lab	j2dataPictogram	BeeBot	ScratchJr
N Curr	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)** -Recognise uses of information technology beyond school. -Use technology safely, respectfully, keeping personal information private; identify where to go for help & support when they have concerns about content/contact on internet/other online technologies.**(DIGITAL LITERACY)**	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)** - Recognise uses of information technology beyond school. - Use technology safely, respectfully, keeping personal information private; identify where to go for help/ support when they have concerns about content/contact on the internet or other online technologies **(DIGITAL LITERACY)**	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)**	- Use technology purposefully to create, organise, store, manipulate and retrieve digital content **(INFORMATION TECHNOLOGY)**	- Understand what algorithms are, how they are implemented as programs on digital devices, that programs execute by following precise & unambiguous instructions. - Create and debug simple programs - Use logical reasoning to predict the behaviour of simple programs - Use technology safely and respectfully, keeping personal information private; identify where to go for help/support when they have concerns about content/contact on the internet or other online technologies. **(COMPUTER SCIENCE)**	
HEAD (Know ledge)	Identify devices which are computers and consider how IT can help us at school and at home. Consider common uses of information technology in a familiar context beyond school. How to use different forms of information technology safely, in a range of different environments. The responsibility associated with choices made when using information technology.	Many devices can be used to take photographs. What constitutes good composition. - portrait or landscape format. - light and focus How the camera autofocus tool can be used to make an object in an image stand out. Simple image editing, including - 'Adjust' tool	Recognise pieces of music by Gustav Holst. Musical terminology that can describe how this music generates emotions. Music pieces have patterns as rhythms. Untuned percussion instruments & computers can create different rhythm patterns. Pitch and duration of notes can to create pieces of music.	The importance of organising data effectively for counting & comparing. How to use tally charts to organise data & represent tally count as total. How to create pictograms manually and create them using a computer. Understand advantages of using computers to create pictograms. Consider whether it is always OK to share data and when it is not OK. Know that it is okay to say no if someone asks for their data & how to report concerns.	Understand how the language used to give instructions needs to be clear & precise & computers can only follow unambiguous instructions. Know how the order in a sequence affects outcome. Understand design in programming includes code and algorithms, also artefacts related to the project, such as artwork and audio. Know programs are broken into chunks & create algorithms for these. Understand how to find and fix	Know that a sequence of commands has an 'outcome'. Know how a set of blocks is used to create programs that produce different outcomes. Know how to modify a given design sheet and create their own quiz questions in ScratchJr.

					errors in their algorithms - 'debugging'	
HANDS (Skills)	Identify examples of computers and describe some uses of computers Identify that a computer is a part of information technology Explain the purpose of information technology beyond school, including in the home Compare types of information technology Explain how information technology benefits us Demonstrate how information technology is used in a shop Recognise that information technology can be connected Show how to use information technology safely and recognise how to use information technology responsibly Say how rules/guides can help me Recognise that choices are made when using information technology and identify the choices that I make when using information technology Explain simple guidance for using information technology in different environments and settings	Use a digital device to take a photograph Explain how I capture a photo Make choices when taking a photograph Explain the process of taking a good photograph Take photos in both landscape and portrait format and xplain why a photo looks better in each format. To describe what makes a good photograph Identify what is wrong with a photograph Improve a photograph by retaking it Experiment with light sources Explain why a picture may be unclear Recognise that images can be changed and use tools to do so. Use a tool to achieve a desired effect Explain my choices Recognise photos can be changed Apply a range of photography skills to capture a photoRecognise photos that have been changed	- identify simple differences in pieces of music -identify patterns in music - create a rhythm pattern - play an instrument following a rhythm pattern - describe how music can be used in different ways - connect images with sounds - experiment with pitch and duration - relate an idea to music - show how music is made from a series of notes - identify that music is a sequence of notes - use a computer to create a musical pattern - can refine my musical pattern To create music for a purpose - save my work - reopen my work - explain how I made my work better	Recognise that we can count and compare objects using tally charts. - record data in a tally chart - compare totals in a tally chart - represent data as pictures Enter data onto a computer Use a computer to view data in a different format Use pictograms to answer simple questions about objects Create a pictogram - collect the data I need - organise data in a tally chart. - use a tally chart to create a pictogram. - explain what the pictogram shows - draw conclusions Select by attribute & make comparisons Tally using a common attribute Create a pictogram to arrange objects by an attribute Answer 'more than'/'less than' and 'most/least' about an attribute To recognise that people can be described by attributes To explain that we can present information using a computer Use a computer program to present info in different ways.	Explain what happens when we change the order of instructions. - create different algorithms for a range of sequences (using the same commands) - use an algorithm to program a sequence - can show the difference in outcomes between two sequences that consist of the same commands follow a sequence predict the outcome of a sequence compare my prediction to the program outcome identify different routes around my mat test my mat to make sure that it is usable Design an algorithm - explain what my algorithm should achieve - use an algorithm to create a program Create and debug a program that I have written - plan algorithms for different parts of a task - test and debug each part of the program	- identify the start of a sequence - show how to run a program - predict the outcome - match two sequences with the same outcome - change the outcome of a sequence of commands - work out the actions of a sprite in an algorithm - build the sequences of blocks I need To change a given design - choose backgrounds - choose characters - create a program based on the new design To create a program using my own design - choose the images - create an algorithm - build block sequence - compare my project to my design - improve my project by adding features - debug
HEART (Values)	Respect Honesty Empathy Collaboration Resilience Determination Excellence						

Year 3						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Overarching	**Time Travel**		**Earth**		**Amazing People**	**Land of Hope & Glory**
Topic	The Stone Age	Bronze Age	Biomes- Savannah	Biomes- Deserts	The Egyptians	Birmingham
ICT Unit	Computer Systems and Networks - Connecting Computers	Creating Media – Animation	Creating media – Desktop publishing	Data and Information Branching Databases	Programming A Sequence in Music	Programming B. Events and Actions
Resource	Painting Program	iMotion	Adobe Spark	j2data Branch & Pictogram	Scratch	Scratch
N Curr	- use sequence, selection, & repetition in; work with variables & forms of input & output. - understand computer networks including the internet; how they provide multiple services, www; & opportunities they offer for communication and collaboration. **(COMPUTER SCIENCE)** - select, use & combine a variety of software (inc internet services) on a range of digital devices to design & create a range of programs, systems & content that accomplish given goals, including collecting, analysing, evaluating & presenting data & information. **(INFO TECHNOLOGY)**	- 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 **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 **(INFORMATION TECHNOLOGY)**	- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating & presenting data & information **(INFO TECHNOLOGY)** - use technology safely, respectfully & responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMPUTER SCIENCE)** - 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 **(INFORMATION TECHNOLOGY)**	
HEAD (Knowledge)	Know relationship between inputs, processes, outputs & apply it to devices & parts of familiar devices. Know that digital devices are connected to others. Know the benefit of connecting digital devices. Know information can be moved between connected devices. Know key network components.	Know how to use simple animation techniques. Develop knowledge of animation technique and apply it to make a stop-frame. Know how to evaluate their animations and improve, based on their feedback. Know how to add other media and effects into their animations.	Recognise how text and images convey information Recognise that text and layout can be edited. Know how to choose appropriate page settings. Know how to add content to a desktop publishing publication Know how different layouts can suit different purposes. Know desktop publishing benefits	Identify attributes needed to collect relevant data. Create branching database. Explain why it is helpful for a database to be well structured. Identify objects using a branching database. Compare information shown in a pictogram with a branching database	Explore a new programming environment. Identify that commands have an outcome Know a program has a start. Recognise that a sequence of commands can have an order. Change the appearance of a project. Create a project from a task description	Explain how a sprite moves in an existing project Create a program to move a sprite in four directions Adapt a program to a new context. Develop a program by adding features. Identify and fix bugs in a program. Design and create a maze-based challenge.

HANDS (Skills)	Explain how digital devices function. - Explain that digital devices accept inputs - Explain that digital devices produce outputs - Follow a process Identify and classify input and output devices - Describe a simple process - Design a digital device Recognise how digital devices can change the way that we work - Explain how digital devices are used for different activities - Recognise similarities and differences between using digital devices and using non-digital tools Explain how a computer network can be used to share information - Recognise different connections - Explain how messages are passed through multiple connections. Explore how digital devices can be connected - Recognise that a computer network is made up of a number of devices. - Demonstate how information can be passed between devices - Explain the role of a switch, server, and wireless access point in a network. - Recognise the physical components of a networkIdentify how devices in a network are connected with one another - Identify networked devices around me - Identify the benefits of computer networks	Explain that animation is a sequence of drawings or photographs - relate animated movement with a sequence of images - predict what an animation will look like - explain why little changes are needed for each frame - create an effective stop-frame animation Plan an animation - break down a story into settings, characters and events - describe an animation that is achievable on screen - create a storyboard Identify the need to work consistently and carefully - use onion skinning to help me make small changes between frames -review a sequence of frames to check my work - evaluate the quality of my animation Review and improve an animation - Explain ways to make my animation better - Evaluate another learner's animation and improve my animation based on feedback - add other media to my animation and evaluate the impact	Words and pictures - explain the difference between text and images - recognise that text and images can communicate messages clearly - identify the advantages and disadvantages of using text and images Edit - change font style, size, and colours for a given purpose - edit text Templates - explain what 'page orientation' means - identify different layouts - match a layout to a purpose - choose a suitable layout for a given purpose - recognise placeholders and say why they are important - create a template for a particular purpose - choose the best locations - paste text and images to create a magazine cover - make changes to content after I've added it Layout - identify different layouts - match a layout to a purpose I can choose a suitable layout for a given purpose Desktop publishing - identify uses of desktop publishing in the real world - compare work made on desktop publishing to work created by hand.	- create two groups of objects separated by one attribute - make up a yes/no question about a collection of objects - arrange objects into a tree structure - create a group of objects within an existing group - select an attribute to separate objects into groups - group objects using my own yes/no questions - prove my branching database works - select objects to arrange in a branching database - compare two branching database structures - create yes/no questions using given attributes - explain that questions need to be ordered carefully to split objects into similarly sized groups - create questions and apply them to a tree structure - select a theme and choose a variety of objects - use a branching database to answer questions - compare two ways of presenting information - explain what a branching database tells us	- explain that objects in Scratch have attributes (linked to). - identify the objects in a project (sprites, backdrops). - recognise that commands are represented as blocks -choose a word which describes an on-screen action for my plan - create a program following a design - identify that each sprite is controlled by commands - create a sequence of connected commands - explain the objects in a project will respond exactly to code. - start a program in different ways - combine sound commands. - explain what a sequence is. - order notes into a sequence. - build sequence of commands. - decide the actions for each sprite in a program. - make design choices for my artwork - identify & name objects needed for project - relate a task description to a design	- choose which keys to use for actions - explain the relationship between an event and an action - identify a way to improve a program. - choose a character for my project - choose a suitable size for a character in a maze. - program movement - choose blocks to set up a program - consider the real world when making design choices - use a programming extension. - build more sequences of commands to make a design work - choose suitable keys to turn on additional features - identify additional features (from a given set of blocks) - match a piece of code to an outcome - modify a program using a design - test a program against a given design - evaluate a project - implement a design - make design choices and justify them
HEART	Respect Honesty Empathy Collaboration Resilience Determination Excellence					

Year 4						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Overarching	**Time Travel**		**Earth**		**Amazing People**	**Land of Hope & Glory**
Topic	Anglo Saxons	Vikings	Earthquakes, Volcanoes and mountains in Europe		Shang Dynasty	London our capital
ICT Unit	Computer Systems & Networks. The Internet	Creating Media Audio Editing	Programming A Repetition in Shapes	Data and Information Data Logging	Creating Media Photo Editing	Programming B Repetition in Games
Resource	Various Websites	Audacity	FMSLogo	Data Logger	Paint.NET	Scratch
N Curr	- understand computer networks including the internet; how they provide multiple services, www; & opportunities they offer for communication and collaboration. **(COMPUTER SCIENCE).** - 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 & information **(INFO TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	- Use search technologies, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 & presenting data & information **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	-Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts - Use sequence, selection & repetition in programs; work with variables & various forms of input and output - Use logical reasoning to explain how simple algorithms work and to detect & correct errors in algorithms & programs. **(COMPUTER SCIENCE).** - 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 **(INFORMATION TECHNOLOGY)**	- 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 **(INFORMATION TECHNOLOGY)** … work with variables and various forms of input and output **(COMPUTER SCIENCE**	- Use search technologies, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 & content that accomplish given goals, including collecting, analysing, evaluating & presenting data & information **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully & responsibly; recognise acceptable /unacceptable behaviour; identify range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMPUTER SCIENCE)** - 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 **(INFORMATION TECHNOLOGY)**

HEAD (Knowledge)	Describe how networks physically connect to other networks Recognise how networked devices make up the internet Outline how websites can be shared.Describe how content can be added and accessed on (WWW) Recognise how the content of the WWW is created by people Evaluate the consequences of unreliable content	Identify that sound can be digitally recorded. Use digital device to record sound. Explain that a digital recording is stored as a file. Explain that audio can be changed. Show that different types of audio can be combined and played together. Evaluate editing choices made.	Identify that accuracy in programming is important Create a program in a text-based language Explain what 'repeat' means Modify a count-controlled loop to produce a given outcome. Decompose a task into small steps. Create a program that uses count-controlled loops to produce a given outcome	Explain data gathered over time can be used to answer questions. Use a digital device to collect data automatically. Explain that a data logger collects 'data points' from sensors over time Use data collected over a duration to find info. Identify the data needed to answer questions Use collected data to answer questions	Explain that digital images can be changed. Change the composition of an image. Know how images can be changed for different uses kNow how to make good choices when selecting different tools Recognise that not all images are real Evaluate how changes can improve an image.	Develop the use of count-controlled loops in a different programming environment Explain that in programming there are infinite loops and count controlled loops Develop a design that includes two or more loops. Modify an infinite loop in a given program Design and create a project that includes repetition
HANDS **(Skills)**	- demonstrate how information is shared across the internet - describe the internet as a network of networks - discuss why a network needs protecting - describe networked devices and how they connect - explain that the internet is used to provide many services - recognise that the WWW contains websites and web pages - describe how to access websites on WWW - describe where websites are stored when uploaded to WWW - explain the types of media that can be shared on the WWW - explain that internet services can be used to create content online - explain what media can be found on websites	- identify digital devices that can record sound and play back - identify the inputs and outputs required to play audio or record sound - recognise the range of sounds that can be recorded - discuss what other people include when recording sound for a podcast - suggest how to improve my recording - use a device to record audio and play back sound - discuss why it is useful to be able to save digital recordings - plan and write podcast content - save a digital recording as a file. - discuss ways in which audio recordings can be altered - edit sections of of an audio	- create a code snippet for a given purpose - explain the effect of changing a value of a command - program a computer by typing commands - test an algorithm in a text-based language - use a template to create a design for a program - write an algorithm to produce a given outcome - identify everyday tasks that include repetition as part of a sequence - identifty patterns in a sequence - use a count-controlled loop to produce a given outcome - choose which values to change in a loop - identify the effect of changing the number of times a task is repeated - predict the outcome of a program containing a count-controlled loop	- choose a data set to answer a given question. - identify data that can be gathered over time. - suggest questions that can be answered using given data - explain that sensors are input devices. - identify that data from sensors can be recorded. - use data from a sensor to answer a given question. - identify a suitable place to collect data - identify intervals used to collect data - talk about the data that I have captured	- explain the effect that editing can have on an image - explore how images can be changed in real life - identify changes that we can make to an image - change the composition of an image by selecting parts of it - consider why someone might want to change the composition of an image - explain what has changed in an edited image - choose effects to make my image fit a scenario - explain why my choices fit a scenario - talk about changes made to images - choose appropriate tools to retouch an image - give examples of positive	- list an everyday task as a set of instructions including repetition. - modify a snippet of code to create a given outcome - predict the outcome of a snippet of code - choose when to use a count-controlled and an infinite loop - modify loops to produce a given outcome - recognise that some programming languages enable more than one process to be run at once - choose which action will be repeated for each object - evaluate the effectiveness of the repeated sequences used in my program - explain what the

	- recognise that I can add content to the WWW" - explain there are rules to protect - explain that websites and their content are created by people - suggest who owns content - explain not everything onWWW is true - explain why I need to think carefully before I share or reshare - explain why some information I find online may not be honest, accurate, or legal	recording - open digital recording from file - choose suitable sounds to include in a podcast - discuss sounds that other people combine - use editing tools - discuss the features of a digital recording - explain that digital recordings need to be exported to share them. - suggest improvements to a digital recording"	- explain that a computer can repeatedly call a procedure - identify 'chunks' of actions in the real world - use a procedure in a program - design a program that includes count-controlled loops - develop my program by debugging it. - make use of a design to write a program	- import a data set - use a computer program to sort data and view data in different ways - plan how to collect data using a data logger - propose a question that can be answered using logged data - use data logger to collect data - draw conclusions from the data that I have collected. - explain the benefits of using a data logger. - interpret data that has been collected using a data logger	and negative effects that retouching can have on an image - describe how an image has been retouched - combine parts of images to create new images - sort images into 'fake' or 'real' and explain my choices - talk about fake images around me - compare the original image with my completed publication - consider the effect of adding other elements to my work - evaluate the impact of my publication on others through feedback	outcome of the repeated action should be - explain the effect of my changes - identify which parts of a loop can be changed - re-use existing code snippets on new sprites - develop my own design explaining what my project will do - evaluate the use of repetition in a project - select key parts of a given project to use in my own design - build a program that follows my design - evaluate the steps I followed when building my project - refine the algorithm in my design
HEART (values)	Respect Honesty Empathy Collaboration Resilience Determination Excellence					

CURRICULUM MAP Computing

Year 5

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overarching	Time Travel		Earth		Amazing People	Land of Hope & Glory
Topic	The Victorians	Heroes & Villains of British History	Water Worlds	Global Trade	The Greeks	Politics
ICT Unit	Data and Information. Flat-File databases	Computer Systems & Networks Sharing Information	Creating Media Video Editing	Creating Media Vector Drawing	Programming A Selection in Physical Computing	Programming B Selection in Quizzes
Resource	j2data Database	PowerPont	Microsoft Photos	Flowchart	Crumble controller, starter kit + motor	Scratch
N Curr	- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 **(INFORMATION TECHNOLOGY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. - 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 **(COMPUTER SCIENCE).** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about	- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	- 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 & information **(INFORMATION TECHNOLOGY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMPUTER SCIENCE)** - 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 **(INFORMATION TECHNOLOGY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMPUTER SCIENCE)**

		content and contact. **(DIGITAL LITERACY)**				
HEAD **(Knowledge)**	How to use a form. Compare paper and computer-based databases Outline how grouping & sorting data allows us to answer questions Explain that tools can be used to select specific data Explain that computer programs can be used to compare data visually Apply my knowledge of a database to ask and answer real-world questions	Explain that computers can be connected together to form systems Recognise the role of computer systems in our lives Recognise how information is transferred over the internet Explain how sharing information online lets people in different places work together Contribute to a shared project online. Evaluate different ways of working together online	Describe what makes a video effective. Identify digital devices that can record video How to use a range of techniques to capture a video Create a storyboard. Know that video can be improved through reshooting and editing Consider the impact of the choices made when making and sharing a video	Identify that drawing tools can be used to produce different outcomes Create a vector drawing by combining shapes Use tools to achieve a desired effect Recognise that vector drawings consist of layers Objects can be grouped to make them easier to work with	How to control a simple circuit connected to a computer. Write a program that includes count-controlled loops Explain that a loop can stop when a condition is met Explain that a loop can be used to repeatedly check if a condition has been met. Design a physical project that includes selection Create a program that controls a physical computing project	Explain how selection is used in computer programs. Relate that a conditional statement connects a condition to an outcome. Explain how selection directs the flow of a program. Design a program which uses selection. Create a program which uses selection Evaluate my program.
HANDS **(Skills)**	- create multiple questions about the same field - explain how information can be recorded. - order, sort, and group my data cards - choose which field to sort data by to answer a given question - explain what a 'field' and a 'record' is in a database - navigate a flat-file database to compare different views of information - combine grouping & sorting to answer more specific questions - explain how information can be grouped - group information to answer questions - choose multiple criteria to answer a given question - choose which field & value are required to answer a given	- describe that a computer system features inputs, processes, and outputs - explain how computer systems communicate with other devices. - explain the parts that build systems. - explain the benefits of a given computer system. - identify tasks that are managed by computer systems - identify the human elements of a computer system - explain how data is transferred over networks - explain that networked digital devices have unique addresses - recognise that data is transferred using agreed methods - explain that the internet	- compare features in different videos - explain that video is a visual media format - identify features of videos - experiment with different camera angles - identify and find features on a digital video recording device - make use of a microphone - capture video using a range of filming techniques. - review how effective my video is - suggest filming techniques for a given purpose - create and save video content - decide which filming techniques I will use - outline the scenes of my video - explain how to improve a video by reshooting and editing	- describe how a vector drawing is different from paper-based drawings - identify the main drawing tools - recognise that vector drawings are made using shapes - explain each element added to a vector drawing is an object - identify the shapes used to make a vector drawing. - move, resize, and rotate objects I have duplicated - explain how alignment grids and resize handles can be used to improve consistency - modify objects to create different effects - use the zoom tool to help me add detail to my drawings - change the order of layers. - identify each added object	- create a simple circuit and connect it to a microcontroller. - explain what an infinite loop does. - program a microcontroller to make an LED switch on - connect more than one output component to a microcontroller - design sequences that use count-controlled loops. - use a count-controlled loop to control output - design a conditional loop - explain that a condition is either true or - program a microcontroller to respond to an input - explain that a condition being met can start an action. - identify a condition and an action in my project - use selection (an 'if…then…' statement) to direct the flow of a program	- identify conditions in a program. - modify a condition in a program. - recall how conditions are used in selection - create a program with different outcomes using selection - identify the condition and outcomes in an 'if... then… else...' statement. - use selection in an infinite loop to check a condition - design the flow of a program which contains 'if… then… else…'. - explain that program flow can branch according to a condition - show that

	question - outline how 'AND' and 'OR' can be used to refine data selection - explain the benefits of using a computer to create graphs - refine a chart by selecting a particular filter - select an appropriate chart to visually compare data - ask questions that need more than one field to answer. - present my findings - refine a search in a real-world context	allows different media to be shared - recognise that connected digital devices allow us to access shared files online - send information over the internet in different ways - compare working online with working offline - explain how the internet enables effective collaboration - identify different ways of working together online - recognise that working together on the internet can be public or private	- select the correct tools to make edits to my video - store, retrieve, and export my recording to a computer - evaluate my video and share my opinions - make edits to my video and improve the final outcome - recognise that my choices when making a video will impact on the quality of the final outcome	creates a new layer - identify which objects are in each layer - copy part of a drawing by duplicating - group to create a single object - reuse a group of objects to develop my vector drawing - apply what I have learned about vector drawings - suggest improvements to a vector drawing - create alternatives to vector drawings	- create a detailed drawing of my project - describe what my project will do - identify a real-world example of a condition starting an action - test and debug my project. - use selection to produce an intended outcome. - write an algorithm that describes what model will do	a condition can direct program flow in one of two ways - identify the outcome of user input in an algorithm - outline a given task - use a design format to outline a project. - implement an algorithm to create the first section of a program. - test a program - I can extend a program - identify the setup code needed in a program - identify ways program could be improved
HEART (Values)	Respect Honesty Empathy Collaboration Resilience Determination Excellence					

CURRICULUM MAP Computing						
Year 6						
Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Overarching	**Time Travel**		**Earth**		**Amazing People**	**Land of Hope & Glory**
Topic	WW2	War / Refugees	America	Riers	Romans	Transition
ICT Unit	Computer Systems & Networks Communication	Creating Media 3D Modelling	Creating Media Web page creation	Data and Information Spreadsheets	Programming A Variables in Games	Programming B Sensing
Resource		Tinkercad	Google Sites	Microsoft Excel	Scratch	micro:bit & Microsoft MakeCode
N Curr	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. - 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 **(COMPUTER SCIENCE).** - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact. **(DIGITAL LITERACY)**	- use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; **(DIGITAL LITERACY)** - 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 **(INFORMATION TECHNOLOGY)**	- 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 **(INFORMATION TECHNOLOGY)**	- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 **(INFORMATION TECHNOLOGY)** - use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; **(DIGITAL LITERACY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMPUTER SCIENCE)** - 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 **(INFORMATION TECHNOLOGY)**	-Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. -Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. -Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs. **(COMP SCIENCE)** - 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 **(INFORMATION TECHNOLOGY)**

HEAD (Knowledge)	- identify how to use a search engine - describe how search engines select results - explain how search results are ranked - recognise why the order of results is important, and to whom - recognise how we communicate using technology - evaluate different methods of online communication	To use a computer to create and manipulate three-dimensional (3D) digital objects To compare working digitally with 2D and 3D graphics To construct a digital 3D model of a physical object To identify that physical objects can be broken down into a collection of 3D shapes To design a digital model by combining 3D objects To develop and improve a digital 3D model	To review an existing website and consider its structure To plan the features of a web page To consider the ownership and use of images (copyright) To recognise the need to preview pages To outline the need for a navigation path To recognise the implications of linking to content owned by other people	To identify questions which can be answered using data To explain that objects can be described using data To explain that formulas can be used to produce calculated data To apply formulas to data, including duplicating To create a spreadsheet to plan an event To choose suitable ways to present data	To define a 'variable' as something that is changeable To explain why a variable is used in a program To choose how to improve a game by using variables To design a project that builds on a given example To use my design to create a project To evaluate my project	To create a program to run on a controllable device To explain that selection can control the flow of a program To update a variable with a user input To use an conditional statement to compare a variable to a value To design a project that uses inputs and outputs on a controllable device To develop a program to use inputs and outputs on a controllable device
HANDS (Skills)	- compare results from different search engines - complete a web search to find specific information - refine my search - explain why we need tools to find things online - recognise the role of web crawlers in creating an index - relate a search term to the search engine's index - explain that a search engine follows rules to rank relevant pages - explain that search results are ordered - suggest some of the criteria that a search engine checks to decide on the order of results - describe some of the ways that search results can be influenced - explain how search engines make money - recognise some of the limitations of search engines	- discuss the similarities and differences between 2D and 3D shapes - explain why we might represent 3D objects on a computer - select, move, and delete a digital 3D shape - change the colour of a 3D object - identify how graphical objects can be modified - resize a 3D object - position 3D objects in relation to each other - rotate a 3D object - select and duplicate multiple 3D objects - create digital 3D objects of an appropriate size - group a digital 3D shape and a placeholder to create a hole in an object - identify the 3D shapes needed to create a model of a real-world object	- answer questions from an existing data set - ask simple relevant questions which can be answered using data - explain the relevance of data headings - apply an appropriate number format to a cell - build a data set in a spreadsheet application - explain what an item of data is - construct a formula in a spreadsheet - explain the relevance of a cell's data type - identify that changing inputs changes outputs - apply a formula to multiple cells by duplicating it - create a formula which includes a range of cells	discuss the different types of media used on websites explore a website - know that websites are written in HTML - draw a web page layout that suits my purpose - recognise the common features of a web page - suggest media to include on my page - describe what is meant by the term 'fair use' - find copyright-free images - say why I should use copyright-free images - add content to my own web page	- explain that the way that a variable changes can be defined - identify examples of information that is variable - identify that variables can hold numbers or letters" - explain that a variable has a name and a value - identify a program variable as a placeholder in memory for a single value - recognise that the value of a variable can be changed" - decide where in a program to change a variable - make use of an event in a program to set a variable - recognise that the value of a variable can be used by a program" - choose the artwork for my project	- apply my knowledge of programming to a new environment - test my program on an emulator - transfer my program to a controllable device" - determine the flow of a program using selection - identify examples of conditions in the real world - use a variable in an if, then, else statement to select the flow of a program" - experiment with different physical inputs - explain that if you read a variable, the value remains

	- choose methods of communication to suit particular purposes - explain the different ways in which people communicate - identify that there are a variety of ways of communicating over the internet - compare different methods of communicating on the internet - decide when I should and should not share - explain that communication on the internet may not be private	- choose which 3D objects I need to construct my model - modify multiple 3D objects - plan my 3D model - decide how my model can be improved - evaluate my model against a given criterion - modify my model to improve it	- recognise that data can be calculated using different operations - apply a formula to calculate the data I need to answer questions - explain why data should be organised - use a spreadsheet to answer questions - produce a graph - suggest when to use a table or graph - use a graph to show the answer to questions	- evaluate what my web page looks like on different devices and suggest/make edits - preview what my web page looks like - describe why navigation paths are useful - explain what a navigation path is - make multiple web pages and link them using hyperlinks - create hyperlinks to link to other people's work - evaluate the user experience of a website - explain the implication of linking to content owned by others	- create algorithms for my project - explain my design choices - choose a name that identifies the role of a variable - create the artwork for my project - test the code that I have written - extend my game further using more variables - identify ways that my game could be improved - share my game with others	- use a condition to change a variable - explain the importance of the order of conditions in else, if statements - modify a program to achieve a different outcome - use an operand (e.g. <>=) in an if, then statement - decide what variables to include in a project - design the algorithm for my project - design the program flow for my project" - create a program based on my design - test my program against my design - use a range of approaches to find and fix bugs
HEART (values)	Respect Honesty Empathy Collaboration Resilience Determination Excellence					