	Computing **Knowledge and Skills** **Progression** **(Cycle B – 2022-2023)**
Intent	At Borrow Wood Primary School, we want all of our pupils to become autonomous, independent users of computing technologies who are inspired and enthused by the computing curriculum. The pupils will understand how digital systems work and how to put this knowledge to use through programming that will enable them to become active participants in a digital world. It is important to us that pupils understand how to use ever-changing technology to express themselves and as a means to drive their generation forward. Our computing curriculum also ensures that pupils become digitally literate – able to use, and develop their ideas through, information and communication technology. We want pupils to develop as respectful, responsible and confident users of technology, aware of the measures that can be taken to keep themselves and others safe online. These aspects of our computing curriculum build on the school's ethos of CHOICE. Through our computer science lessons we want pupils to develop creativity, resilience and problem solving and critical thinking skills. Where pupils feel supported to achieve the best, they can be challenged to deepen their knowledge. The curriculum has been designed in line with the National curriculum for computing; this provides a broad, balanced and ambitious curriculum. Our aim is to provide a deep knowledge base alongside opportunities to apply skills in various digital contexts and to ensure that our curriculum is accessible to every pupil.

Cycle B

Year 1 and 2	Core Knowledge		
	Online Safety ***Online Relationships*** Children will have an understanding of how technology shapes communication styles and enhances positive relationships in online communities. Children will become aware of behaving with respect online and how their behaviour may lead to harm. ***Online Bullying***	**Computer Science** **Robot Algorithms** Children will know what the word 'sequence' means and that robots have a computer inside that follow our instructions. Children will know what the words 'clear' and 'precise' means and why they are important to consider when writing instructions.	**Information Technology** **Pictograms** Children will know what the term 'data' means. Children will know that data can be collected in the form of a tally chart. Children will know what the term 'attribute' means and know how to use attributes to organise their data.

	Children will develop knowledge on the impact that online bullying can have on others as well as how to effectively report incidents. Children will become aware of how legislation is used to police online behaviour. ***Managing Online Information*** Children will become aware of how online information is found, viewed and interpreted. The children will know how to effectively search and evaluate data as well as recognising risks and online threats and challenges. ***Copyright and Ownership*** Children will develop knowledge of ownership of online content and strategies for protecting personal content. Children will become aware of the consequences of illegal access, downloading and distributing.	Children will know the meaning of 'commands' and 'algorithms' and a basic understanding of what a 'bug' is and what 'debugging' means.	
	Key Skills		
		Computer Science **Robot Algorithms** • Describe a series of instructions as a sequence • Explain what happens when we change the order of instructions • Use logical reasoning to predict the outcome of a program (series of commands) • Explain that programming projects can have code and artwork • Design an algorithm • Create and debug a program	**Information Technology** **Pictograms** • Recognise that we can count and compare objects using tally charts • Recognise that objects can be represented as pictures • Create a pictogram • Select objects by attribute and make comparisons • Recognise that people can be described by attributes • Explain that we can present information using a computer
	Key Vocabulary		

	Online Safety ***Online Relationships*** • app – a computer application designed for mobile devices, such as mobile phones and tablets • communicate – to exchange thoughts, ideas or information • consent – to give permission or approval; agree • permission – to get consent from an authority to do something • technology – machinery or equipment ***Online Bullying*** • behave – to act in a certain way • bullying – the act of frightening or hurting someone more than once • experience – something that a person has done or lived through • online – connected to the Internet ***Managing Online Information*** • content – the text, image and videos you can see on the screen • search engine – a program that searches the Internet for information • trusted adult – a grown up you can rely on and get help from • voice activated searching – using your voice to search on the Internet or an app. ***Copyright and Ownership*** • create – to make something • technology – machinery and equipment used to create something • save – to keep from being lost	**Computer Science** **Robot Algorithms** • command – to order or instruct • enact – to act out • instructions – to act of giving knowledge; teaching/ directions or orders • logical reasoning – to apply rules to problem solving • outcome – a result of something • predict – to tell in advance that something will happen • sequence – a pattern or process in which one thing follows another	**Information Technology** **Pictograms** • attributes – a characteristic of a person, place or thing • collect – to gather together • construct – to build; put together • data – facts, figures or other pieces of information that can be used to learn something about • heading – a word or group of words at the top; title • pictogram – a chart that uses pictures or symbols to represent data • tally chart – a simple way of recording and counting frequencies (how often something happened)

	• Internet – a network of computers all linked together		
	National Curriculum Links		
	Online Safety 1.5 recognise common uses of information technology beyond school 1.6 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	**Computer Science** 1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions 1.2 create and debug simple programs 1.3 use logical reasoning to predict the behaviour of simple programs	**Information Technology** 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content

Year 3 and 4	Core Knowledge		
	Online Safety ***Online Relationships*** Children will have an understanding of how technology shapes communication styles and enhances positive relationships in online communities. Children will become aware of behaving with respect online and how their behaviour may lead to harm. ***Online Bullying*** Children will develop knowledge on the impact that online bullying can have on others as well as how to effectively report incidents. Children will become aware of how legislation is used to police online behaviour. ***Managing Online Information*** Children will become aware of how online information is found, viewed and interpreted. The children will know how to effectively search and evaluate data as well as recognising risks and online threats and challenges. ***Copyright and Ownership*** Children will develop knowledge of ownership of online content and strategies for protecting personal content. Children will become aware of the consequences of illegal access, downloading and distributing.	**Computer Science** **Repetition in shapes** Children will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo or Turtle Academy, a text-based programming language.	**Information Technology** **Data Logging** Children will gain knowledge of special input devices called sensors are used to monitor the environment and know how to use them to collect data over long periods of time. Children will develop an understanding of data points, data sets and logging intervals.
	Key Skills		

		Computer Science **Repetition in shapes** • Programme a screen turtle to draw shapes and letters • To use the REPEAT command • Understand count controlled loops • Decompose a task into smaller chunks • Create a programme to include a count controlled loop	**Information Technology** **Data Logging** • Explain that 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 long duration to find information • Identify the data needed to answer questions • Use collected data to answer questions
	Key Vocabulary		
	Online Safety ***Online Relationships*** • livestreaming – to play a live video on the Internet or app • offline – not connected to the Internet • online – connected to the Internet • permission – being allowed to do something • respect – to treat someone in a kind way • strategies – a plan or method use to achieve a goal • trusted adult - a grown up you can rely on and get help from ***Online Bullying*** • behave – to act in a certain way • bullying – the act of frightening or hurting someone more than once • content – the text, image and videos you can see on the screen	**Computer Science** **Repetition in shapes** count-controlled loop – to make a computer do the same thing a specific number of times instructions - to act of giving knowledge; teaching/ directions or orders loop – a set of instructions that a computer program repeats over and over again outcome - a result of something repeat – to do or experience again sequence – a pattern or process in which one thing follows another	**Information Technology** **Data Logging** attributes – a characteristic of a person, place or thing automatic – working or operating by itself data - facts, figures or other pieces of information that can be used to learn something about data logger – an electronic device which automatically monitors and records data over a period of time data point – a unit of information or single fact device – an invention or machine used to perform simple tasks or something else made for a specific purpose input device – a piece of equipment used to provide data and control signals

	• experience – something that a person has done or lived through • online – connected to the Internet ***<u>Managing Online Information</u>*** • accurate – free of mistakes • autocomplete – to fill something in without the need to type • fact – something said or known to be true • fake news – news that is not accurate • opinion – what a person believes to be true but is not based on fact • search engine – a program that searches the Internet for information • trusted adult - a grown up you can rely on and get help from ***<u>Copyright and Ownership</u>*** • content - the text, image and videos you can see on the screen • permission – being allowed to do something		sensors - a device that detects and responds to certain changes in the environment
	<u>National Curriculum Links</u>		
	<u>Online Safety</u> 1.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**<u>Computer Science</u>** 1.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller part 1.2 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.	**<u>Information Technology</u>** 1.3 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 1.4 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 1.5 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.

Year 5 and 6	Core Knowledge		
	Online Safety ***Online Relationships*** Children will have an understanding of how technology shapes communication styles and enhances positive relationships in online communities. Children will become aware of behaving with respect online and how their behaviour may lead to harm. ***Online Bullying*** Children will develop knowledge on the impact that online bullying can have on others as well as how to effectively report incidents. Children will become aware of how legislation is used to police online behaviour. ***Managing Online Information*** Children will become aware of how online information is found, viewed and interpreted. The children will know how to effectively search and evaluate data as well as recognising risks and online threats and challenges. ***Copyright and Ownership*** Children will develop knowledge of ownership of online content and strategies for protecting personal content. Children will become aware of the consequences of illegal access, downloading and distributing.	**Computer Science** **Variables in Games** Children will know that a 'variable' is something that is changeable and give examples of information that is variable. Children will know why a variable could be used in a program and explain that a variable has a name and a value and recognise that the value of a variable can be changed.	**Information Technology** **Spreadsheets** Children will know what an item of data is and that a spreadsheet is a computer application that allows user to organise, analyse and store data in a table. Children will know that data (words, numbers, dates, images and sounds) headings allow us to organise the data in a meaningful way and data. Children will know that a data set is a collection of related data that can be modified using a computer. Children will know what a cell reference is and that spreadsheets use formulas and how to use them.
	Key Skills		

		Computer Science **Variables in Games** • Define a 'variable' as something that is changeable • Explain why a variable is used in a program • Choose how to improve a game by using variables • Design a project that builds on a given example • Use my design to create a project • Evaluate a project	**Information Technology** **Spreadsheets** • Identify questions which can be answered using data • Explain that objects can be described using data • Explain that formula can be used to produce calculated data • Apply formulas to data, including duplicating • Create a spreadsheet to plan an event • Choose suitable ways to present data
	Key Vocabulary		
	Online Safety ***Online Relationships*** • boundaries – a line indicating what is acceptable behaviour • collaborate – to work alongside someone • communication – the sharing or exchanging of messages, information, or ideas • consequences – the result of an action • harm – to be injured or hurt • trusted adult – a grown up you can rely on and get help from ***Online Bullying*** • banter – the playful and friendly exchange or teasing remarks • bullying – the act of frightening or hurting someone more than once • trusted adult – a grown up you can rely on and get help from •	**Computer Science** **Variables in Games** constant – going on without a pause; persistent initialisation – set to the value or put in the condition appropriate to the start of the operation program – a sequence of instructions that allows a computer to perform a task or a set of operations variable – likely to change; not constant; something that can change or that has no fixed value	**Information Technology** **Spreadsheets** data – facts, figures or other pieces of information that can be used to learn something about duplication – something that is an exact copy of something else formula – an equation that makes calculations based on data input – information that is put into a computer output – the information stored in a computer when it is transmitted to a screen or printer

	Managing Online Information • fake news – news that is not accurate • limitations – only being able to achieve so much and no more • sceptical – having or showing doubt ***Copyright and Ownership*** • assess – to look at and try to discover the quality of something • justify – to show to be true or right • permitted – to allow		
	National Curriculum Links		
	Online Safety 1.7 use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**Computer Science** 1.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller part 1.2 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.	**Information Technology** 1.3 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 1.4 use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 1.5 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.