Fairway Primary School

Computing Long Term Planning

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≈ Responsible ≈ Ambitious ≈ Individual ≈ Explorers ≈

Fairway Primary School

Computing Long Term Planning

EXPLORE ---KNOW---COMMUNICATE

CONCEPTS

COMPUTING SYSTEMS AND NETWORKS
This concept concerns systems, networks and how they are used including the internet, hardware and software.
PROGRAMMING
This concept looks at interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors.
DATA AND INFORMATION
This concept looks at collecting, analysing, evaluating, presenting data and information.
CREATING MEDIA
This concept looks at design and development, communicating and collaborating online, evaluating online content, respectful and responsibl e communication, presenting and creating content.
ONLINE SAFETY
Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.

SUBJECT CONTENT KS1

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- 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

SUBJECT CONTENT KS2

Pupils should be taught to:

- 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
- 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
- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

YEAR 1

COMPUTING SKILLS (Taught throughout the year)

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
• Learning how to take photos and videos on an iPad. • Learning how to explore and tinker with hardware to find out how it works. • Recognising that some devices are input devices and others are output devices. • Learning where keys are located on the keyboard. • Learning that decomposition means breaking a problem down into smaller parts. • Using decomposition to solve unplugged challenges. • Using logical reasoning to predict the behaviour of simple programs. • Following a basic set of instructions. • Assembling instructions into a simple algorithm. • Programming a Floor robot to follow a planned route. • Learning to debug instructions when things go wrong.	• Using a basic range of tools within graphic editing software. • Taking and editing photographs. • Developing control of the mouse through dragging, clicking and resizing of images to create different effects. • Recognising devices that are connected to the internet. • Searching and downloading images from the internet safely. • Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. • Using representations to answer questions about data. • Using software to explore and create pictograms and branching databases. • Recognising common uses of information technology, including beyond school. • Understanding some of the ways we can use the internet.	• Logging in and out and saving work on their own account. • When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable. • Understanding how to interact safely with others online. • Recognising how actions on the internet can affect others. • Recognising what a digital footprint is and how to be careful about what we post

CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **SKILLS SHOWCASE**
	Computer Systems and Networks Creating Media	Programming	Data and Information Programming
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	Programming	Creating Media Data and Information Online Safety	Data and Information
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Online Safety Creating Media		

VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **SKILLS SHOWCASE**
	mouse software password clipart layers left click	algorithm bug/debug input output decompose	save account
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	algorithm tinker code program	image photograph editing crop right click	data pictogram branching database
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

	YEAR 1		
NATIONAL CURRICULUM OBJECTIVES	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS** **Improving Mouse Skills** L1 main event only L2 two sessions (sketch pad) L3 main event only L4 2 sessions Not L5	COMPUTING BLOCK 2 **PROGRAMMING 1** **Algorithms Unplugged**	COMPUTING BLOCK 3 **SKILLS SHOWCASE** **Rocket to the Moon** L1 Attn grabber and main event (word) L2 two lessons (sketchpad) L3 Not L4/5
	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private.	Pupils should be taught to: • Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

	YEAR 1		
NATIONAL CURRICULUM OBJECTIVES	COMPUTING BLOCK 4 **PROGRAMMING 2** **Programming 2 Beebots** L1 – 4 Not L5	COMPUTING BLOCK 5 **CREATING MEDIA** **Digital Imagery** L1 L2 (iPad record numbers for L5) L3 two lessons (sketchpad) L4 (PC) L5 (iPads)	COMPUTING BLOCK 6 **DATA HANDLING** **Introduction to data** L1 L2 two lessons (sketchpad pictogram) Not L3 L4 Not L5
	Pupils should be taught to: • Use logical reasoning to predict the behaviour of simple programs • Create and debug simple programs. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs.	Pupils should be taught to: • Use logical reasoning to predict the behaviour of simple programs • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Recognise common uses of Information technology beyond school • Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Recognise common uses of information technology beyond school.
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Pupils should be taught to: • recognise common uses of information technology beyond school • 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		

YEAR 1

COMPUTING KNOWLEDGE

COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **SKILLS SHOWCASE**
• To log in to a computer and access a website. • To develop mouse skills. • To use mouse skills to draw and edit shapes using Dazzle. • To draw a scene from a story using digital tools.	• To understand what an algorithm is. • To follow instructions precisely to carry out an action. • To understand that computers and devices around us use inputs and outputs. • To understand and be able to explain what decomposition is. • To know how to debug an algorithm.	• To use a basic range of tools on graphics editing package. • To design a rocket. • To sequence a set of instructions. • To build a rocket. • To input data to a table or spread sheet.
COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
• To learn to take a video on an iPad. • To plan and follow a set of instructions precisely • To create and debug simple program	• To take clear photos. • To edit photos. • To search for and import images. • To create a photo collage	• To represent data in different ways. • To use technology to represent data in different ways. • To collect and record data. • To sort data.
COMPUTING BLOCK ONGOING **ONLINE SAFETY** TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY		
• To know what the internet is and how to use it safely. • To understand different feelings when using the internet. • To understand how to treat others, both online and in-person. • To understand the importance of being careful about what we post and share online.		

YEAR 2

COMPUTING SKILLS (Taught throughout the year)		
COMPUTER SCIENCE	**INFORMATION TECHNOLOGY**	**DIGITAL LITERACY**
• Recognising that buttons cause effects and that technology follows instructions. • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with cameras, tablets or computers. • Developing confidence with the keyboard and the basics of touch typing. • Articulating what decomposition is. • Decomposing a game to predict the algorithms used to create it. • Learning that there are different levels of abstraction. • Explaining what an algorithm is. • Following an algorithm. • Creating a clear and precise algorithm. • Learning that programs execute by following precise instructions. • Incorporating loops within algorithms. • Using logical thinking to explore software, predicting, testing and explaining what it does. • Using an algorithm to write a basic computer program.	• Using word processing software to type and reformat text. • Using software (and unplugged means) to create story animations. • Creating and labelling images. • Searching for appropriate images to use in a document. • Collecting and inputting data into a spreadsheet. • Interpreting data from a spreadsheet.	• Learning how to create a strong password. • Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable • Identifying whether information is safe or unsafe to be shared online. • Learning to be respectful of others when sharing online and ask for their permission before sharing content. • Learning strategies for checking if something they read online is true.

CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2**
	Computing Systems and Networks Data and Information	Programming	Computing Systems and Networks Data and Information
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	Programming	Creating Media	Data and Information Programming
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Online Safety		

VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2**
	technology screen wired wireless	algorithm decomposition bug/debugging artificial intelligence	backspace delete spacebar bold italics
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	algorithm blocks code programming animation loop script	storyboards animation decompose stop motion frame	spreadsheet column row
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

YEAR 2

NATIONAL CURRICULUM OBJECTIVES	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1** **What is a computer?** Not L1 & L2 L3 Not L4 & L5	COMPUTING BLOCK 2 **PROGRAMMING 1** **Algorithms & Debugging** L1 L2 (iPads) L3 L4 Not L5	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2** **Word Processing** L1 only 5 lessons using typing club
	Pupils should be taught to: • Recognise common uses of information technology beyond school • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use logical reasoning to predict the behaviour of simple programs	Pupils should be taught to: • Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions • Create and debug simple programs • Use logical reasoning to predict the behaviour of simple programs • Solve problems by decomposing them into smaller parts. • 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 and repetition in programs	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Use technology safely and respectfully, keeping personal information private • Recognise common uses of information technology beyond school • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

YEAR 2

NATIONAL CURRICULUM OBJECTIVES

COMPUTING BLOCK 4 **PROGRAMMING 2** **Intro to block coding Option 2 Scratch** L1 – L4 L5 2 lessons	COMPUTING BLOCK 5 **CREATING MEDIA** **Digital Imagery Stop Motion using iPads** L1 – 5 (iMotion app)	COMPUTING BLOCK 6 **DATA HANDLING** **International space station** L1 - L5
Pupils should be taught to: • Use logical reasoning to predict the behaviour of simple programs • Create and debug simple programs. • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content • Recognise common uses of information technology beyond school • Use technology safely and respectfully, keeping personal information private	Pupils should be taught to: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content.

COMPUTING BLOCK ONGOING **ONLINE SAFETY**
Pupils should be taught to: • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

YEAR 2

COMPUTING KNOWLEDGE

COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2**
• To recognise how technology is controlled. • To understand the role of computers.	• To decompose a game to predict the algorithms that are used. • To understand that computers can use algorithms to make predictions (machine learning). • To plan algorithms that will solve problems. • To understand what abstraction is.	• To begin to learn to touch type. • To understand how to use a word processor.
COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
• To create an animation. • To use characters as buttons. • To follow an algorithm. • To plan and use code to create an algorithm.	• To understand what stop motion animation is. • To create a stop motion animation. • To plan my stop motion animation. • To create my planned stop motion animation	• To understand how computers can help humans survive in space. • To create a digital drawing of essential items for life in space. • To understand the role of sensors on the ISS. • To create an algorithm for growing a plant in space. • To interpret data
COMPUTING BLOCK ONGOING **ONLINE SAFETY** TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY		
• To know what happens to information posted online. • To know how to keep things safe and private online. • To explain what should be done before sharing information online. • To explain why I have the right to say no and deny permission. • To learn strategies that will help me decide if something I see online is true or not.		

YEAR 3

COMPUTING SKILLS (Taught throughout the year)		
COMPUTER SCIENCE	**INFORMATION TECHNOLOGY**	**DIGITAL LITERACY**
• Understanding what the different components of a computer do and how they work together. • Learning about the purpose of routers. • Understanding the role of the key components of a network. • Identifying the key components within a network, including whether they are wired or wireless. • Understanding that websites and videos are files that are shared from one computer to another. • Using decomposition to explain the parts of a laptop computer. • Using decomposition to explore the code behind an animation. • Using repetition in programs. Using logical reasoning to explain how simple algorithms work. • Explaining the purpose of an algorithm. Forming algorithms independently • Using logical thinking to explore more complex software; predicting, testing and explaining what it does. • Incorporating loops to make code more efficient. • Continuing existing code. • Making reasonable suggestions for how to debug their own and others' code.	• Taking photographs and recording video to tell a story. • Using software to edit and enhance their video adding music, sounds and text on screen with transitions. • Understanding the purpose of emails. • Learning to log in and out of an email account. Writing an email including a subject, 'to' and 'from.' Sending an email with an attachment. • Replying to an email. • Understanding the vocabulary to do with databases: field, record, data. • Learning about the pros and cons of digital versus paper databases. • Sorting and filtering databases to easily retrieve information. • Creating and interpreting charts and graphs to understand data. •	• Recognising that different information is shared online including facts, beliefs and opinions. • Learning how to identify reliable information when searching online. • Learning how to stay safe on social media. • Considering the impact technology can have on mood. • Learning about cyberbullying. • Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.

YEAR 3			
CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1**	COMPUTING BLOCK 2 **PROGRAMMING**	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2**
	Computing Systems and Networks	Programming	Computing Systems and Networks Creating Media Online Safety
	COMPUTING BLOCK 4 **COMPUTING SYSTEMS & NETWORKS 3**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	Computing Systems and Networks	Creating Media	Data and Information
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Online Safety Creating Media		

YEAR 3			
VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1**	COMPUTING BLOCK 2 **PROGRAMMING**	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2**
	file the cloud server router	algorithm code decompose repetition sprite loop remix	email cc bcc inbox recipient
	COMPUTING BLOCK 4 **COMPUTING SYSTEMS & NETWORKS 3**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **DATA HANDLING**
	components hard drive Rom Ram QR Code	storyboards fade to white/black transition camera angle voice over graphics	database filter
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

YEAR 3

NATIONAL CURRICULUM OBJECTIVES

COMPUTING BLOCK 1
COMPUTING SYSTEMS & NETWORKS 1

Pupils should be taught to:

- 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
- 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

COMPUTING BLOCK 2
PROGRAMMING

Pupils should be taught to:

- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- 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

COMPUTING BLOCK 3
COMPUTING SYSTEMS & NETWORKS 2

Pupils should be taught to:

- 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
- 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 […] content that accomplish given goals
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

COMPUTING BLOCK 4
COMPUTING SYSTEMS & NETWORKS 3

Pupils should be taught to:

- 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
- 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.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

COMPUTING BLOCK 5
CREATING MEDIA

Pupils should be taught to:

- 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
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Solve problems by decomposing them into smaller parts
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

COMPUTING BLOCK 6
DATA HANDLING

Pupils should be taught to:

- 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
- 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
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

COMPUTING BLOCK ONGOING
ONLINE SAFETY

Pupils should be taught to:

- 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.
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

YEAR 3			
COMPUTING KNOWLEDGE	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS 1** **Networks** L1 main event & discussion L2 attn grabber & wrapping up (one lesson) L3 video & attn grabber L4 Not L5 4 lessons touch type	COMPUTING BLOCK 2 **PROGRAMMING** **Programming Scratch** L1 – L3 L4 two lessons L5 two lessons	COMPUTING BLOCK 3 **COMPUTING SYSTEMS & NETWORKS 2 Email** L1 – L2 L3 two lessons Not L4/L5
	• To understand what a network is and understand our school network • To understand how information moves around a network and recognise real-world networks. • To understand how the Internet works and explain a website's journey.	• To explore a programming application. • To use repetition (a loop) in a program. • To program an animation. • To program a story. • To program a game.	• To understand what email is used for and to send an email. • To edit email content and add an attachment. • To understand the importance of being kind online and what this looks like. • To understand the importance of being kind online and what this looks like • To understand that not all emails are genuine.

YEAR 3

COMPUTING KNOWLEDGE

COMPUTING BLOCK 4 **COMPUTING SYSTEMS & NETWORKS 3** **Journey inside a computer** Not L1 L2 Not L3 – L4 L5	COMPUTING BLOCK 5 **CREATING MEDIA** **Video trailers (iPad)** L1-L2 L3 two lessons L4 – L5	COMPUTING BLOCK 6 **DATA HANDLING** **Comparison cards database** L1-L2 L3 two lessons L4 Not L5
• To recognise basic inputs and outputs. • To decompose a laptop. • To understand the purpose of computer parts. • To decompose a tablet computer	• To plan a book trailer. • To take photos or videos to tell a story. • To edit a video. • To add text and transitions to a video. • To evaluate video editing.	• To understand the terminology around databases. • To compare paper and computerised databases. • To sort, filter and interpret data. • To represent data in different ways. • To sort data for a purpose.
COMPUTING BLOCK ONGOING **ONLINE SAFETY** **TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY**		
• To understand how the internet can be used to share beliefs, opinions and facts. • To understand the effects that some internet use can have on our feelings and emotional wellbeing. • To understand the ways personal information can be shared on the internet. • To understand the rules for social media platforms.		

YEAR 4

COMPUTING SKILLS (Taught throughout the year)

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
• Using tablets to film a weather forecast. • Understanding that weather stations use sensors to gather and record data which predicts the weather. • Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration. • Using decomposition to understand the purpose of a script of code. • Using past experiences to help solve new problems. • Creating algorithms for a specific purpose. • Coding a simple game. • Using abstraction and pattern recognition to modify code. • Incorporating variables to make code more efficient. • Using abstraction to identify the important parts when completing both plugged and unplugged activities.	• Designing and creating a webpage for a given purpose. • Use online software for documents, presentations, forms and spreadsheets. • Using software to work collaboratively with others. • Understanding why some results come before others when searching. • Using keywords to effectively search for information on the internet. • Understanding that information found by searching the internet is not all grounded in fact. • Understanding that data is used to forecast weather. • Recording data in a spreadsheet independently. • Sorting data in a spreadsheet to compare using the 'sort by…' option. • Designing a device which gathers and records sensor data.	• Learning to make judgements about the accuracy of online searches. • Identifying forms of advertising online. • Recognising what appropriate behaviour is when collaborating with others online. • Reflecting on the positives and negatives of time spent online. • Identifying respectful and disrespectful online behaviour.

YEAR 4			
CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **CREATING MEDIA**
	Computing Systems and Networks	Programming	Creating Media Online Safety
	COMPUTING BLOCK 4 **SKILLS SHOWCASE**	COMPUTING BLOCK 5 **PROGRAMMING 2**	COMPUTING BLOCK 6 **DATA HANDLING**
	Computing Systems and Networks Programming	Programming	Data and Information
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Creating Media Online Safety		

YEAR 4			
VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **CREATING MEDIA**
	collaboration spreadsheet data representation numerical data survey	variable conditional statement orientation script	subpage homepage tab hyperlinks embed
	COMPUTING BLOCK 4 **SKILLS SHOWCASE**	COMPUTING BLOCK 5 **PROGRAMMING 2**	COMPUTING BLOCK 6 **DATA HANDLING**
	HTML tags copyright content URL hacker	abstraction algorithm computational thinking logical reasoning	heat sensor sensor data
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

YEAR 4

NATIONAL CURRICULUM OBJECTIVES

COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **CREATING MEDIA**
Pupils should be taught to: • 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact • 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	Pupils should be taught to: • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output •	Pupils should be taught to: • 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
COMPUTING BLOCK 4 **SKILLS SHOWCASE**	COMPUTING BLOCK 5 **PROGRAMMING 2**	COMPUTING BLOCK 6 **DATA HANDLING**
Pupils should be taught to: • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems • Solve problems by decomposing them into smaller parts	Pupils should be taught to: • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Pupils should be taught to: • 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 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 • Use sequence, selection, and repetition in programs; work with variables and various forms of input and output • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts •
COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
Pupils should be taught to: • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		

YEAR 4			
COMPUTING KNOWLEDGE	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS** **Journey inside a computer** L1-L2 L3 two lessons (google slides) L4-L5	COMPUTING BLOCK 2 **PROGRAMMING 1** **Further coding with Scratch** L1 - L2 L3 two lessons L4-L5	COMPUTING BLOCK 3 **CREATING MEDIA** **Google Creating Media: Website Design** L1-L4 (google sites) L5 two lessons
	• To understand that software can be used collaboratively online to work as a team. • To understand how to contribute to someone else's work effectively. • To understand how to create effective presentations. • To understand how to create and share Google Forms. • To understand how to use a shared spreadsheet to explore data	• To recall the key features of Scratch. • To understand how a Scratch game works by using decomposition to identify key features.	• To explore the features of Google Sites to learn how to create content for a web page. • To plan content for a web page as a collaborative online piece of work. • To create a web page as part of a collaborative class website. • To plan and create a website.

YEAR 4

COMPUTING BLOCK 4 **SKILLS SHOWCASE** **HTML** L1-L5	COMPUTING BLOCK 5 **PROGRAMMING 2** **Computational Thinking Scratch** L1-L3 L4 two lessons Not L5	COMPUTING BLOCK 6 **DATA HANDLING** **Investigating Weather** L1 (google sheets) L2 L3 (sketchpad) L4 L5 (green screen)
• To understand and identify examples of HTML tags. • To change HTML code for a specific purpose. • To change the HTML and CSS to alter the appearance of an object on the web. • To alter key elements on a webpage including text and images.	• To understand that computational thinking is made up of four key strands • To understand what decomposition is and how to apply it to solve problems • To understand what pattern recognition and abstraction mean • To understand how to create an algorithm and what it can be used for	• To log data taken from online sources within a spreadsheet • To design a weather station • To design an automated machine to respond to sensor data • To understand how weather forecasts are made • To use tablets or digital cameras to present a weather forecast

COMPUTING BLOCK ONGOING
ONLINE SAFETY
TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY

- To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy
- To describe some of the methods used to encourage people to buy things online
- To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true
- To explain that technology can be designed to act like or impersonate living things
- To explain how technology can be a distraction and identify when I might need to limit the amount of time spent

YEAR 5

COMPUTING SKILLS (Taught throughout the year)

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
• Learning that external devices can be programmed by a separate computer. • Learning how the data for digital images can be compressed. • Recognising that computers transfer data in binary and understanding simple binary addition. . • Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations. • Understanding how bit pattern works. • Decomposing animations into a series of images. • Decomposing a program without support. • Decomposing a story to be able to plan a program to tell a story. • Predicting how software will work based on previous experience. • Writing more complex algorithms for a purpose. • Programming an animation. • Confidently using loops in their programming. • Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. • Writing code to create a desired effect. • Using a range of programming commands. • Using repetition within a program. • Amending code within a live scenario.	• Using logical thinking to explore software more independently, making predictions based on their previous experience. • Using software programme Scratch to create music. • Using the video editing software to animate. • Identify ways to improve and edit programs, videos, images etc. • Developing searching skills to help find relevant information on the internet. • Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns. • Understanding how data is collected in remote or dangerous places. • Understanding how data might be used to tell us about a location. • Learn about different forms of communication that have developed with the use of technology.	• Identifying possible dangers online and learning how to stay safe. • Evaluating the pros and cons of online communication. • Recognising that information on the internet might not be true or correct and learning ways of checking validity. • Learning what to do if they experience bullying online. • Learning to use an online community safely

YEAR 5			
CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **DATA HANDLING**
	Computing Systems and Networks Creating Media	Programming	Data and Information Computing Systems and Networks
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **SKILLS SHOWCASE**
	Programming	Creating Media	Creating Media Data and Information
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Online Safety		

YEAR 5			
VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING 1**	COMPUTING BLOCK 3 **DATA HANDLING**
	copyright credit fake news page rank	output soundtrack	8-bit binary ASCII binary Boolean byte
	COMPUTING BLOCK 4 **PROGRAMMING 2**	COMPUTING BLOCK 5 **CREATING MEDIA**	COMPUTING BLOCK 6 **SKILLS SHOWCASE**
	conditional statement variable	Imotion app flipbook fluid movement onion skinning	bitmap CAD compression JPEG pixels RGB
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

YEAR 5

NATIONAL CURRICULUM OBJECTIVES

COMPUTING BLOCK 1
COMPUTING SYSTEMS & NETWORKS

Pupils should be taught to:

- 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) to create content that accomplishes given goals, including collecting data and information
- Use search technologies effectively and be discerning in evaluating digital content
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

COMPUTING BLOCK 2
PROGRAMMING 1

Pupils should be taught to:

- Design, write and debug programs that accomplish specific goals
- 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
- 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

COMPUTING BLOCK 3
DATA HANDLING

Pupils should be taught to:

- 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
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

COMPUTING BLOCK 4
PROGRAMMING 2

Pupils should be taught to:

- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller part

COMPUTING BLOCK 5
CREATING MEDIA

Pupils should be taught to:

- Design, write and debug programs that accomplish specific goals
  use sequence, selection, and repetition in programs
- Solve problems by decomposing them into smaller parts
- Use sequence and repetition in programs; work with various forms of input and output
- Use logical reasoning to explain how some simple algorithms work
- Work with variables and various forms of input

COMPUTING BLOCK 6
SKILLS SHOWCASE

Pupils should be taught to:

- 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
- 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
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

COMPUTING BLOCK ONGOING
ONLINE SAFETY

Pupils should be taught to:

- 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
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
- Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

YEAR 5

COMPUTING KNOWLEDGE

COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS** Search Engines L1 – L2 L3&4 Romans Not L5	COMPUTING BLOCK 2 **PROGRAMMING 1** **Music Scratch** L1 – L5	COMPUTING BLOCK 3 **DATA HANDLING** **Mars Rover** L1 – L2 Not L3 L4- L5
• To understand what a search engine is and how to use it • To be aware that not everything online is true • To search effectively • To create an informative poster • To understand how search engines work	• To tinker with Scratch music elements • To create a program that plays themed music • To plan a soundtrack program • To program a soundtrack • To program music for a specific purpose	• To identify how and why data is collected from space • To read and calculate numbers using binary code • To identify the computer architecture of the Mars Rovers • To use simple operations to calculate bit patterns • To represent binary as text
COMPUTING BLOCK 4 **PROGRAMMING 2** **Stop Animation – Imotion app** L1-L5	COMPUTING BLOCK 5 **CREATING MEDIA** **Micro:bit** **L1- L5**	COMPUTING BLOCK 6 **SKILLS SHOWCASE** **Mars Rover 2** **L1 – L5**
• To understand what animation is • To understand what stop motion animation is • To plan my stop motion video, thinking about the characters I want to use • To create a stop motion animation • To edit and assess my stop motion	• To tinker with a new piece of software • To program an animation • To recognise coding structures • To create a program	• To understand how bit patterns represent images as pixels • To explain how the data for digital images can be compressed • To identify and explain the 'fetch, decode, execute' cycle • To create a safe online profile and tinker with 3D design software • To modify the design of a 3D object using
COMPUTING BLOCK ONGOING **ONLINE SAFETY** TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY		
• To understand how apps can access our personal information and how to alter the permissions • To be aware of the positive and negative aspects of online communication • To understand how online information can be used to form judgements • To discover ways to overcome bullying • To understand how technology can affect health and wellbeing		

YEAR 6

COMPUTING SKILLS (TAUGHT THROUGHOUT THE YEAR)

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
• Learning about the history of computers and how they have evolved over time. • Using the understanding of historic computers to design a computer of the future. • Understanding and identifying barcodes, QR codes and RFID. Identifying devices and applications that can scan or read barcodes, QR codes and RFID. • Understanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files). • Decomposing a program into an algorithm. Using past experiences to help solve new problems. • Writing increasingly complex algorithms for a purpose. • Debugging quickly and effectively to make a program more efficient. • Remixing existing code to explore a problem. Using and adapting nested loops.	• Using logical thinking to explore software independently, iterating ideas and testing continuously. • Using search and word processing skills to create a presentation. • Creating and editing sound recordings for a specific purpose. • Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions. • Using design software TinkerCAD to design a product. • Creating a website with embedded links and multiple pages. • Understanding how search engines work. • Understanding how barcodes, QR codes and RFID work. • Gathering and analysing data in real time. • Creating formulas and sorting data within spreadsheets. • Learning about the Internet of Things and how it has led to 'big data'. • Learning how 'big data' can be used to solve a problem or improve efficiency.	• Learning about the positive and negative impacts of sharing online. • Learning strategies to create a positive online reputation. • Understanding the importance of secure passwords and how to create them. • Learning strategies to capture evidence of online bullying in order to seek help. • Using search engines safely and effectively. • Recognising that updated software can help to prevent data corruption and hacking.

YEAR 6			
CONCEPTS	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 3 **DATA HANDLING**
	Computer Systems and Networks Creating Media	Programming	Computer Systems and Networks Data and Information
		COMPUTING BLOCK 5 **DATA HANDLING**	COMPUTING BLOCK 6 **SKILLS SHOWCASE**
		Data and Information	Programming Creating Media
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		
	Online Safety		

YEAR 6			
VOCABULARY	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 3 **DATA HANDLING**
	acrostic code audio advert brute force hacking Caesar cipher cipher date shift cipher Nth letter cipher pigpen cipher	AI-generated image/text authenticity	barcode encrypt infrared RFID
	COMPUTING BLOCK 4 **CREATING MEDIA**	COMPUTING BLOCK 5 **DATA HANDLING**	COMPUTING BLOCK 6 **SKILLS SHOWCASE**
	nested loop syntax	Big Data 2 bluetooth GPS infrared SIM	image rights
	COMPUTING BLOCK ONGOING **ONLINE SAFETY**		

YEAR 6			
	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS**	COMPUTING BLOCK 2 **PROGRAMMING**	COMPUTING BLOCK 3 **DATA HANDLING**
NATIONAL CURRICULUM OBJECTIVES	Pupils should be taught to: • Solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • 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 • Select, use and combine a variety of software […] to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Pupils should be taught to: • Design, write and debug programs that accomplish specific goals • Use sequence, selection, and repetition in programs • Solve problems by decomposing them into smaller parts	Pupils should be taught to: • 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 • 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 6

NATIONAL CURRICULUM OBJECTIVES

COMPUTING BLOCK 4 **CREATING MEDIA**	COMPUTING BLOCK 5 **DATA HANDLING**	COMPUTING BLOCK 6 **SKILLS SHOWCASE**
Pupils should be taught to: • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller part	Pupils should be taught to: • Design, write and debug programs that accomplish specific goals use sequence, selection, and repetition in programs • Solve problems by decomposing them into smaller parts • Use sequence and repetition in programs; work with various forms of input and output • Use logical reasoning to explain how some simple algorithms work • Work with variables and various forms of input	Pupils should be taught to: • 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. • 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 • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

COMPUTING BLOCK ONGOING **ONLINE SAFETY**
Pupils should be taught to: • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

YEAR 6			
	COMPUTING BLOCK 1 **COMPUTING SYSTEMS & NETWORKS** **Bletchley Park & History of Computers** L1 – L5	COMPUTING BLOCK 2 **PROGRAMMING** **Computing systems AI** L1-L5	COMPUTING BLOCK 3 **DATA HANDLING** **Big Data 1** L1-L5
COMPUTING KNOWLEDGE	• To know the importance of having a secure password and what "brute force hacking" is. • To know the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2. • To know about some of the historical figures that contributed to technological advances in computing. • To know what techniques are required to create a presentation using appropriate software. • To know that sound clips can be recorded using sound recording software and that sound clips can be edited and trimmed.	• Identify different types of AI and their applications in everyday life. • Exploring text-based and image-based AI tools to understand how they generate content. • Applying coding skills like decomposition and pattern recognition to interact with AI applications. • Analysing the effectiveness of prompts and refining them for improved AI outputs. • Exploring ethical considerations around AI use and its impact on society.	• To identify how barcodes and QR codes work • To explore how infrared waves transmit data • To recognise the uses of RFID • To input and analyse real-world data • To analyse and evaluate data

YEAR 6

COMPUTING KNOWLEDGE

COMPUTING BLOCK 4 **PROGRAMMING** **PYTHON** L1-L5	COMPUTING BLOCK 4 **DATA HANDLING** **Big Data 2** L1 – L5	COMPUTING BLOCK 5 **SKILLS SHOWCASE** **Inventing a product** L1-L5
• To tinker with a new piece of software • To understand nested loops • To understand basic Python commands • To use loops when programming To understand the use of random numbers	• To know that data can become corrupted within a network but this is less likely to happen if it is sent in 'packets'. • To know that devices or that are not updated are most vulnerable to hackers. • To know the difference between mobile data and WiFi.	• To design an electronic product • To code and debug a program • To create a website • To create and edit a video • To understand the techniques used in advertising a product

COMPUTING BLOCK ONGOING
ONLINE SAFETY
TO BE TAUGHT THE FIRST SESSION AFTER EACH HOLIDAY

- To describe issues online that give us negative feelings and know ways to get help
- To think about the impact and consequences of sharing online
- To know how to create a positive online reputation
- To be able to describe how to capture bullying content as evidence
- To manage personal passwords effectively
- To be aware of strategies to help be protected online