Computing Long Term Plan

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

	Year 1						Year 2					
	We are celebrating: Creating a card electronically	**E-safety: How technology has changed over time**	**We are treasure hunters: Using programmable toys**	**We are TV chefs: Filming the steps of a recipe**	**We are painters: Illustrating an E-Book**	**We are storytellers: Producing a talking book**	**E-safety: Emails**	**We are researchers: Researching a topic**	**We are games testers: Exploring how computer games work**	**We are programmers: Programming on screen**	**We are zoologists: Recording bug hunt data**	**We are photographers: Taking, selecting & editing digital images**
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			Creating and planning instructions.						Understanding that computer games work using instructions Using coding in Scratch	Use, test, amend instructions		
Create and debug simple programs										Spot mistakes in program.		
Use logical reasoning to predict the behaviour of simple programs	Use of different programs and making links.								Using Scratch	Analysis of how computers games work	Using J2E	

Objective												
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Create, store, retrieve digital content. Check work for errors Find information on a website.			Using a camera and recording sound.	Create, store, retrieve digital content.	Create, store, retrieve digital content. Using a camera and recording sound.					Generate, save and retrieve work.	Create, store, retrieve digital content. Using a camera and recording sound. Use search engines to research
Recognise common uses of information technology beyond school							Emails in the home and in business	Computer games creation			How data is collected and used	
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	Following the school safer internet rules, trusted adults, keeping personal information safe, using equipment safely.						Following the school safer internet rules, using emails safely					

Pupils should be taught to:	Year 3						Year 4					
	We are programmers: Programming an animation	We are opinion pollsters: Collecting & analysing data	We are presenters: Videoing performance	We are vloggers: Making & sharing a short screencast presentation	We are communicators: Communicating safely on the internet	We are bug fixers: Finding & correcting bugs in programs	We are co-authors: Producing a wiki	We are HTML editors: Editing & writing HTML	We are meteorologists: Presenting the weather	We are software developers: Developing a simple educational game	We are toy designers: Prototyping an interactive toy	We are musicians: Producing digital music
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Design a sequence of instructions, write a program to create an animation.					De-bugging programs, improve programs.				Write instructions to control an on-screen robot.	De-bugging a program and correcting mistakes.	
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output						Testing variables				Experiment with variables to control models.	Designing a toy with computer-controlled input and output.	Use sequence software to create music.
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Correct mistakes in a program.					Improving and amending programs.				Explain how algorithms work.		
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		Explain how information is collected and delivered			Understand the purpose of computer networks and providing multiple services.							
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content				Research information and understand how this is displayed.	Recognising that not all information on the internet may be true.		Research information	Research information				
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	Present information.	Use a range of software.	Use a range of software.	Use a range of software.			Use a range of software to create and	Create web pages and present information	Produce simple charts from data			Create, record, mix, edit music

content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information			Present information.	Design and create content.			edit.	.	collection and present information.			
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact					Following the safer internet rules for the school. Ways to keep safe when sharing ideas online. Use emails safely. Know what to do when there are concerns.		Being cautious when using internet searches and how to report unsuitable images.					

Pupils should be taught to:	Year 5						Year 6					
	We are game developers: Developing an interactive game	We are web developers: Creating a web page about cyber safety	We are cryptographers: Computational thinking	We are artists: Fusing Geometry & art	We are architects: Creating a virtual space	We are bloggers: Sharing experiences & opinions	We are travel writers: Using media to document a trip	We are publishers: Creating a year book	We are computational thinkers: Mastering algorithms for searching, sorting & mathematics	We are adventure gamers: Making a text-based adventure game	We are advertisers: Creating a short television advert	We are network engineers: Exploring computer networks, including the internet
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Find and correct mistakes in a game.			Combing sequences of instructions and procedures.			Explain how algorithms work.		Write a simple program. De-bug programs.	Plan and create a text-based adventure. Find solutions to problems.		
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Using sequence instructions to create a game.		Messages in Morse Code				Using selections in programs.			Using selections in programs. Working with variables.		
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs			Using Caesar and substitution ciphers.						Use algorithms.	Explain how algorithms work. Detect problems in algorithms.		
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						Writing, commenting on, editing and adding media to blog posts.						Understanding how information can be represented digitally. Name and recognise hardware. Understand how the classroom computer is linked to a web server. Understanding how

												data passes across the internet. Understanding conversion of computer names to computer addresses.
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content		Checking for security certificates. Analyse information found on the internet, use a range of search engines.				Checking for security certificates.						
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	Using a range of software to add music.			Creating computer generated images.	Creating and editing virtual space in 2D and 3D.		Combine software and use range of technology for a specific project. Present, publish and analyse content.	Use a range of programs across different devices to produce a desired outcome.			Use a range of programs across different devices to produce a desired outcome.	
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		Strategies for reporting concerns, risks of providing personal information online, using nicknames, keeping personal information	Importance of creating secure passwords.				Dealing with malicious messages.			Following school's safer internet rules. Understanding copyright. Dangers in meeting people from online.		Understanding the risks of online technology and how to minimise these. Create and use strong passwords. Understand how information

		private.										is presented online.