

Computing

End of Year Expectations



	Unit	National Curriculum Objectives	Key Knowledge	Enrichment
Year 6	Internet Communication	➤ 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 ➤ 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	➤ the world wide web was invented by Tim Berners-Lee ➤ the internet is indexed and a search engine uses this to give you an output ➤ that you can narrow an internet search by being more specific ➤ search engines prioritise websites for advertising/sponsored websites before other results ➤ that we can communicate with text, video, images and audio ➤ that web content has age limits	Computing Club
	Variables in games	➤ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems;	➤ explores the concept of variables in programming through games in Scratch	Computer Aided Design Workshop

		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	➤ learn what variables are, and relate them to real-world examples of values that can be set and changed ➤ use variables to create a simulation of a scoreboard ➤ experiment with variables in an existing project, then modify them, then they will create their own project ➤ apply their knowledge of variables and design to improve their game in Scratch	
	Introduction to spreadsheets	➤ 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	➤ introduces the learners to spreadsheets ➤ supported in organising data into columns and rows to create their own data set ➤ taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data ➤ taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them ➤ use spreadsheets to plan an event and answer questions ➤ create graphs and charts, and evaluate their results in comparison to questions asked.	
Year 5	Sharing information	➤ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	➤ that a system is the input, process and output ➤ that there are digital systems like traffic lights which have multiple systems going on within them ➤ computers communicate with protocols (an agreed way of doing something)	Computing Club

		➤ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output ➤ 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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	➤ a packet is a message that a computer sends to another ➤ an IP address is a computer's unique identifier (address)	
	Video Editing	➤ 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	➤ how to create short videos in groups ➤ be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video ➤ guided with step-by-step support to take their idea from conception to completion ➤ have the opportunity to reflect on and assess their progress in creating a video	

		a range of ways to report concerns about content and contact.		
	Selection in quizzes	➤ 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	➤ develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if... then... else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false' ➤ learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program ➤ evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved	
Year 4	The internet	➤ 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	➤ A router enables us to connect a network to the internet ➤ The internet is connected by lots of routers ➤ The World Wide Web is only one part of the internet ➤ The features of a website include a title, links to other websites or pages, videos, pictures, text ➤ Anyone can view a website ➤ Websites have owners and writers but these might not be the same person. ➤ Copyright is the person who owns the permission to use specific content/material ➤ That not everything published on the internet is true ➤ That information on the internet can be shared and spread.	

		acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
Repetition in Games	➤ 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	➤ explore the concept of repetition in programming using the Scratch environment ➤ discover similarities between two environments ➤ look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition ➤ design and create a game which uses repetition, applying stages of programming design throughout		
Repetitions in shapes	➤ 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	➤ how to find their way around J2 code Logo ➤ how to plan an algorithm and create code to draw a shape - how to use repeated code to create shapes and patterns - how to decompose a code to work out a shape - to use the degrees of angles to create a regular shape ➤ To layer shapes to create a design		

		➤ 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 ➤		
	Data logging	➤ ...work with various forms of input ➤ 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	➤ consider how and why data is collected over time ➤ consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment ➤ collect data as well as access data captured over long periods of time ➤ look at data points, data sets, and logging intervals ➤ spend time using a computer to review and analyse data ➤ pose questions and then use data loggers to automatically collect the data needed to answer those questions	

Year
3

Connecting Computers

- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- 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

- that a digital device has an input, a process and an output.
- that a process is an instruction or programme that tell the input what to do to create the output
- The differences between digital devices and non-digital tools.
- That a computer network is connected by wires and a server
- That a switch is connected to every computer and can therefore pass info from any computer to any computer
 - that computers connect to make a network
- That networks are connected to make the internet

Sequencing Sound

- 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

- How Scratch differs to Scratch junior
 - that an algorithm is a sequence of instructions or set of rules
 - that you can code instructions to create a sequence
 - how to manipulate sound on scratch
- Can combine learning about sequences of movement and sound sequences to create an overall performance.

Year 2		collecting, analysing, evaluating and presenting data and information		
	Desktop Publishing	➤ 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	➤ become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages ➤ use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents ➤ introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover ➤ start to add text and images to create their own pieces of work using desktop publishing software ➤ look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world	
	Computing systems and networks	➤ 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.	➤ Recognise computer systems in shops, hospitals and libraries ➤ Recognise IT that is not a computer (camera, USB, whiteboard, printer) ➤ Know that technology has a computer inside ➤ Computers are used in the real world to turn on the street lights, work the traffic lights, open automatic doors, work a car, operate a till/self-checkout ➤ Technology can be used in the home to communicate, do jobs and play on ➤ Know what a barcode is and how it works ➤ How to use a QR code ➤ That the digital 5 a day help me to have a balanced digital diet and better wellbeing. ➤ That the digital 5 a day includes: connect, be active, get create, give to others and be mindful	Computing Club Coding Club LEGO STEM Workshop
	Introduction to Quizzes	➤ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by	➤ how to find their way around ScratchJr ➤ how to follow step-by-step instructions ➤ that an outcome is what happens as a result of an action	

	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	➤ how to add actions and speech to a ScratchJr programme ➤ how to change the backgrounds on ScratchJr - That binary means that there are only two possible answers - how to create a quiz with a specific outcome
Robot algorithms	➤ 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 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.	➤ develops pupils’ understanding of instructions in sequences and the use of logical reasoning to predict outcomes ➤ Pupils will use given commands in different orders to investigate how the order affects the outcome. ➤ Pupils will also learn about design in programming. ➤ They will develop artwork and test it for use in a program. ➤ They will design algorithms and then test those algorithms as programs and debug them.
Pictograms	➤ use technology purposefully to create, organise, store, manipulate and retrieve digital content ➤ 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.	➤ begin to understand what the term data means and how data can be collected in the form of a tally chart ➤ learn the term ‘attribute’ and use this to help them organise data ➤ progress onto presenting data in the form of pictograms and finally block diagrams ➤ use the data presented to answer questions

Year 1	Technology around us	➤ Recognise common uses of information technology beyond school ➤ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content ➤ 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.	➤ Computers are used in school to play videos, share information on slides, listen to music, play games... ➤ Can give examples and non-examples of technology (eg a pencil is a non example) ➤ A desktop sits on a surface in one place ➤ A laptop is portable ➤ A tablet has a touchscreen and no separate keyboard and mouse ➤ A computer might have a screen, keyboard and mouse ➤ How to use a mouse to move, click and drag ➤ How to type in a username and password ➤ That to use a computer responsibly by holding it carefully, stop using it when someone is talking, take turns, only use the apps that you've been told to, don't share passwords.	Computing Club Coding Club
	Moving a robot	➤ 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 ➤ Recognise common uses of information technology beyond school	➤ develop their understanding of technology and how it can help them in their everyday lives ➤ start to become familiar with the different components of a computer by developing their keyboard and mouse skills ➤ consider how to use technology responsibly	
	Digital Writing	➤ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ➤ Use technology safely and respectfully, keeping personal information private	➤ develop their understanding of the various aspects of using a computer to create and manipulate text ➤ become more familiar with using a keyboard and mouse to enter and remove text ➤ consider how to change the look of their text, and will be able to justify their reasoning in making these changes ➤ Explain what they have done to create a piece of typed work.	
EYFS	Technology around us	➤ To explore technology around us and understand that it has a function	➤ I know that a keyboard operates a computer	TA Computer

			➤ I know that a remote control operates a computer and TV ➤ I know that a mobile and landline phone have the same function ➤ I know that a fridge and freezer keeps things cool/frozen ➤ I know that a microwave makes things hot ➤ I know that a visualiser makes a bigger picture of an object ➤ I know that the interactive board is a big computer	Project
	Using a robot	➤ To explore and use directional language	➤ I know that that a beebot is a robot ➤ I know that that pressed button tells the robot to do something ➤ I know that that programming is when you tell a computer or robot to do something ➤ I know that what the words forwards, backwards, left and right mean ➤ To know that they can program a sequence of instructions to the beebot and have a go	
	Digital Writing	➤ To explore technology around us and understand that it has a function	➤ I know that that pressing the keyboard will produce letters and numbers on the laptop ➤ To type their name	
	Internet Safety	➤ To explore what the internet is and how to use it safely.	➤ I know that the internet is on laptops, computers, and mobile phones ➤ I know that that anyone can be playing a game with them online ➤ I know that not to share personal details online ➤ I know that to speak to a trusted adult if something does not feel safe online	