Skills & Knowledge progression: Computing

National Curriculum – Aims and purpose	School aims - skills, attitudes and knowledge that we would like all children to develop on their journey through the school
Purpose of study 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. **Aims** The national curriculum for computing aims to ensure that all pupils: • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems •can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • are responsible, competent, confident and creative users of information and communication technology.	We want to help our children to become confident, independent users of IT across the curriculum and in their life beyond school. Children in every class and year group will be given opportunities to discover how IT can support them in their learning, and will be encouraged to enthusiastically try out new technologies, apps and software. They will gain the transferable skills needed to adapt to ever-changing software, and be as prepared as they can be for the technologies that they will encounter as they grow up. Crucial to much of this is the ability to think logically and to break ideas down into discrete steps. These computer science skills are therefore a vital strand in our teaching. Our children will also know how to use all of this safely and responsibly, know who to talk to when they come across something that doesn't seem right, fair, acceptable or appropriate, and know when to turn off the technology and walk away. They will be taught to treat others with respect and recognise that behaviour online should be no different to behaviour in 'real life'.

Milestones:
At Stapleford Primary School children are taught in mixed age classes e.g. Years 1 & 2 together etc. Our curriculum sets out progression in the form of three 'Milestones'. The children work towards each Milestone for two years. During the first year pupils attain an understanding of the skills set out in the Milestone and during the second year they develop an advanced or deeper understanding. Each Milestone contains a range of descriptors which provide details of the skills to be covered. Over a two-year period, students become more and more familiar with these details by exploring them in a breadth of contexts. This helps pupils to "know more" and "remember more."

Links to learning in EYFS:	Links to other subjects / curriculum areas:	Experiences every child should have:
Understanding the World : Technology • Knows how to operate simple equipment • Shows an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones • Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images • Knows information can be retrieved from computers • Completes a simple program on a computer • Uses ICT hardware to interact with age-appropriate computer software	• Presenting work from across the curriculum (using digital cameras, video, Word, Publisher, PowerPoint, Excel or similar) • Using online simulations to explore ideas in science or geography • Using the internet as a search tool to support learning across the curriculum (needs to be a taught skill if this is to be effective) • Using spreadsheets & databases to analyse and explore data (particularly in maths and science) • Using apps to support learning • eSafety aspects have strong PSHE link	• Creating videos and sharing them with friends and family • Seeing something move in response to their commands • Produce something of their own that makes them go 'Wow!' • Chances to try things out, go wrong & discover that the computer doesn't blow-up and the internet doesn't shut down as a result

Skills Progression: Computing – Years 1 & 2

Year groups	Code This concept involves developing an understanding of instructions, logic and sequences.		Connect This concept involves developing an understanding of how to safely connect with others.	Communicate This concept involves using apps to communicate one's ideas.	Collect This concept involves developing an understanding of databases and their uses.
1 & 2 Milestone 1	**Motion**	• Control motion by specifying the number of steps to travel, direction and turn.	• Participate in class social media accounts. • Understand online risks and the age rules for sites.	• Use a range of applications and devices in order to communicate ideas, work and messages.	• Use simple databases to record information in areas across the curriculum.
	Looks	• Add text strings, show and hide objects and change the features of an object.			
	Sound	• Select sounds and control when they are heard, their duration and volume.			
	Draw	• Control when drawings appear and set the pen colour, size and shape.			
	Events	• Specify user inputs (such as clicks) to control events.			
	Control	• Specify the nature of events (such as a single event or a loop).			
	Sensing	• Create conditions for actions by waiting for a user input (such as responses to questions like: What is your name?).			
	Variables & lists	• From Year 3 onwards.			
	Operators	• From Year 3 onwards.			

Skills Progression: Computing – Years 3 & 4

Year groups	Code This concept involves developing an understanding of instructions, logic and sequences.		Connect This concept involves developing an understanding of how to safely connect with others.	Communicate This concept involves using apps to communicate one's ideas.	Collect This concept involves developing an understanding of databases and their uses.
3 & 4 Milestone 2	**Motion**	• Use specified screen coordinates to control movement.	• Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term 'copyright'. • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work.	• Use some of the advanced features of applications and devices in order to communicate ideas, work or messages professionally.	• Devise and construct databases using applications designed for this purpose in areas across the curriculum.
	Looks	• Set the appearance of objects and create sequences of changes.			
	Sound	• Create and edit sounds. Control when they are heard, their volume, duration and rests.			
	Draw	• Control the shade of pens.			
	Events	• Specify conditions to trigger events.			
	Control	• Use IF THEN conditions to control events or objects.			
	Sensing	• Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).			
	Variables & lists	• Use variables to store a value. • Use the functions define, set, change, show and hide to control the variables.			
	Operators	• Use the Reporter operators () + () () - () () * () () / () to perform calculations.			

Skills Progression: Computing – Years 5 & 6

Year groups	Code This concept involves developing an understanding of instructions, logic and sequences.		Connect This concept involves developing an understanding of how to safely connect with others.	Communicate This concept involves using apps to communicate one's ideas.	Collect This concept involves developing an understanding of databases and their uses.
5 & 6 Milestone 3	**Motion**	• Set IF conditions for movements. Specify types of rotation giving the number of degrees.	• Collaborate with others online on sites approved and moderated by teachers. • Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used.	• Choose the most suitable applications and devices for the purposes of communication. • Use many of the advanced features in order to create high quality, professional or efficient communications.	• Select appropriate applications to devise, construct and manipulate data and present it in an effective and professional manner.
	Looks	• Change the position of objects between screen layers (send to back, bring to front).			
	Sound	• Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.			
	Draw	• Combine the use of pens with movement to create interesting effects.			
	Events	• Set events to control other events by 'broadcasting' information as a trigger.			
	Control	• Use IF THEN ELSE conditions to control events or objects.			
	Sensing	• Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.			
	Variables & lists	• Use lists to create a set of variables.			
	Operators	• Use the Boolean operators () < () () = () () > () ()and() ()or()			

		Not() to define conditions. • Use the Reporter operators () + () () - () () * () () / () to perform calculations. Pick Random () to () Join () () Letter () of () Length of () () Mod () This reports the remainder after a division calculation Round () () of ().			

KS1 (Class 3 – Year 1 & 2) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Computing (see Purple Mash scheme of work)	Unit 1.1. Online Safety & Exploring Purple Mash Unit 2.5 Effective Searching Unit 1.4 Lego Builders Unit 1.9 Technology outside school	Unit 1.2 Grouping & Sorting Unit 2.6 Creating Pictures Unit 1.8 Spreadsheets	Unit 1.7 Coding Unit 2.1 Coding	Unit 1.1. Online Safety & Exploring Purple Mash Unit 1.5 Maze Explorers Unit 2.4 Questioning	Unit 2.2 Online Safety Unit 1.6 Animated Story Books Unit 2.7 Making Music	Unit 2.3 Spreadsheets Unit 1.3 Pictograms Unit 2.8 Presenting Ideas

KS2 (Class 2 – Year 3 & 4) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Computing (see Purple Mash scheme of work)	Unit 3.1 Coding Unit 3.2 Online safety Unit 3.3 Spreadsheets	Unit 3.4 Touch Typing Unit 3.5. Email	Unit 3.6 Branching Databases Unit 3.7 Simulations Unit 3.8 Graphing	Unit 4.1 Coding Unit 4.2 Online Safety	Unit 4.3 Spreadsheets Unit 4.4 Writing for different audiences	Unit 4.5 Logo Unit 4.6 Animation Unit 4.7 Effective Search Unit 4.8 Hardware Investigators

KS2 (Class 1 – Year 5 & 6) Rolling Programme

Subject	**Year A** (2022-2023), (2024-2025) (2026-2027) etc.			**Year B** (2021-2022), (2023-2024), (2025-2026) etc.		
	Autumn Term	Spring Term	Summer Term	Autumn Term	Spring Term	Summer Term
Computing (see Purple Mash scheme of work)	Unit 5.1 Coding Unit 5.2 Online Safety	Unit 5.3 Spreadsheets Unit 5.4 Databases	Unit 5.5 Game Creator Unit 5.6 3D Modelling Unit 5.7 Concept Maps	Unit 6.1 Coding Unit 6.2 Online Safety	Unit 6.3 Spreadsheets Unit 6.4 Blogging	Unit 6.5 Text Adventures Unit 6.6 Networks Unit 6.7 Quizzing