Computing Progression – Moorlands Primary School

The Computing Curriculum can be divided into three inter-related strands:

- *Computer Science – the programming aspects*
- *Information Technology – creation and use of digital materials (these skills may be used across the curriculum)*
- *Digital Literacy – keeping safe online, communicating and using technology in a digital world (these skills are developed across the curriculum).*

Statement Number	National Curriculum Statement – KS1
1.1	understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
1.2	create and debug simple programs
1.3	use logical reasoning to predict the behaviour of simple programs
1.4	use technology purposefully to create, organise, store, manipulate and retrieve digital content
1.5	recognise common uses of information technology beyond school
1.6	use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Statement Number	National Curriculum Statement – KS2
2.1	design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
2.2	use sequence, selection, and repetition in programs; work with variables and various forms of input and output
2.3	use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
2.4	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
2.5	use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
2.6	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
2.7	use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

By the end of EYFS pupils should:	By the end of Year 1 pupils should:	By the end of Year 2 pupils should:	By the end of Year 3 pupils should:	By the end of Year 4 pupils should:	By the end of Year 5 pupils should:	By the end of Year 6 pupils should:
	1.1 Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions		**2.1 Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.**			
Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	**Children understand that an algorithm is a set of instructions**. To combine forwards, backwards and four direction commands to plan a simple program finding more than one solution.	**To design an algorithm and make predictions upon their outcomes. Children can debug a program and explain that a sequence of commands has a start and an outcome.**	Children can turn a simple **real-life situation into an algorithm** for a program by deconstructing it into manageable parts. **Children recognise that a sequence of commands has an order and an outcome. They are able to identify and fix bugs in a program.**	**Children create a program in a text-based language. They use 'repeat' and controlled loops within a program**.	Children may attempt to turn **more complex real-life situations into algorithms** for a program by deconstructing it into manageable parts. Children are able to test and debug their programs. **They develop understanding of conditional statements.**	Children use algorithms within a real life situation. **They are able to define a 'variable' and use conditional statements within algorithms to control an output.**
	1.2 Create and debug simple programs.		**2.2 Use sequence, selection and repetition in programs; work with variables and various forms of input and output.**			
	To create more than one solution to a problem. Identify the effect of changing a value.	**Children can create a simple program that achieves a specific purpose.** They can also identify and correct some errors whether this is on software or using BeeBots. **Children are able to explain**	**Children demonstrate the ability to design and code a program that follows a simple sequence.** They recognise that algorithms are a sequence of connected	**Children are able to use and explain 'repeat' within a text-based program. Loop** can be used as part of the repetition and it is recognised that there are inputs and outputs within a sensor scenario.	Children can translate algorithms that include **sequence, repetition loop. Children can identify and modify conditions within a selection, using 'if', 'then', 'else' conditions. These conditional statements relate to an outcome. Conditions are used within physical computing.**	Children translate algorithms that include **sequence, selection and repetition into code**. **They are able to define and use a variable within a program. A program is developed to use inputs, outputs and a controllable device.**

		a sequence of commands, debug and improve a program.	commands and are able to identify and fix bugs within a program.			
	1.3 Use logical reasoning to predict the behaviour of simple programs.		**2.3 Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.**			
	To explain a command and predict the outcome involving a sequence of up to four commands. Two programs can be devised for the same output. Children can say what will happen if a simple value is changed.	**To predict the outcome of a sequence and explain choices made for a block design algorithm.**	Using a block design program in a **sequence** of connected commands. I can test, identify and fix bugs within a program.	To decompose a program into parts and select which part will be **repeated** explaining the effect of changes. Algorithms are amended to debug outcomes.	**To explain a condition is true or false and describe what the outcome of physical programming is in addition to testing and debugging. To relate a conditional statement to an outcome and explains that selection directs the flow of a program.**	To explain why a **variable** is used in a program and know where to place a variable within a program. Children can transfer a program a program to a controllable device modifying it to achieve different outcomes.
	1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	**1.4 Use technology purposefully to create, organise, store, manipulate and retrieve digital content.**	**2.4 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.**			
	Children are able to identify technology, a computer and its main parts. They are able to use hardware such as a mouse and keyboards. Children are able to add and remove text and choose the drawing tools for purpose. Data is groups with similar properties	**To recognise uses and features of information technology and devices. Children use tools to change media. Objects are selected through an attribute and comparisons are made. Technology is used purposefully through music.**	Children can explain **inputs and outputs of digital devices and** recognise they change the way we work. An understanding of **connected devices is developed and physical components of a network.**	Children recognise the main component parts of **hardware which allow computers to join and form a network.** They understand the **difference between the Internet and the World Wide Web and how websites can be shared over the WWW**	Children understand the value of computer networks **and recognise the value of computer systems in lives. Children understand the internet allows different media to be shared and collaboration takes place online.**	Children recognise how we **communicate using technology and evaluate different methods for particular purpose.**

	and simple questions about this data are answered.					
	1.5 Recognise common uses of information technology beyond school		**2.5 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.**			
	Children can identify technology around us and the use of it.	**To recognise the uses and features of information technology in the home, school and beyond.**	Children understand **the function, features and layout of a search engine**.	Children understand the function, features and layout of a search engine. **They can appraise selected webpages for credibility and information at a basic level.**	**Children group and sort with greater complexity. They can navigate a flat-file database and sort/group to answer questions.**	**Children search with greater complexity for digital content when using a search engine.** They are able to explain in some detail how credible a webpage is and the information it contains.
			2.6 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			
			Stop-frame animation Sequence in Music Branching Database Desktop Publishing	Audio Editing Logo Photo editing Scratch Data logging	Video editing Physical control – crumbles Flat-file database Vector Drawing Quizzes	Web page creation Micro-bits Spreadsheets 3d Modelling Sensing.
	1.6 Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.		**2.7 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.**			

ONLINE SAFETY:

All objectives and guidance on short term planning for E-safety can be found at https://projectevolve.co.uk/toolkit/

Autumn 1 – Privacy & Security and Health, Well-being and Lifestyle

Spring 1 – Online Bullying and Relationships (in addition to Safer Internet Day)

Summer 1 – Self-image and online reputation

'Managing Information online' and 'Ownership' to be taught through other curriculum opportunities in context of searching online.

Privacy and Security To identify simple examples of personal information. To describe people who can be trusted with this information.	**Privacy and Security** Recognise more detailed examples of personal information. Describe how passwords can protect the information. Explain why I should ask a trusted adult before sharing information.	**Privacy and Security** Describe online information that can be seen by other. Explain the purpose of and use passwords. Explain household devices that connect to the internet. Describe some rules to keep a password safe.	**Privacy and Security** Give reasons why information shouldn't be shared. Explain why passwords are important. Describe how connected devices share information. Describe strategies for keeping passwords private.	**Privacy and Security** Explain what a strong password is. Know that others may pretend to be me online and explain why they may do this. Know the internet can be monitored. Describe strategies for keeping my personal information private.	**Privacy and Security** Create and use strong passwords. Understand free apps use private information and understand some apps make additional payments.	**Privacy and Security** Use and understand management of passwords explaining what to do if lost/stolen. Explain app permissions and how privacy can be increased. Know some ways people target online to gain money or information illegally.
Health, Well-being and Lifestyle Identify rules to keep us safe in and beyond the home.	**Health, Well-being and Lifestyle** Identify rules to keep us safe in and beyond the home giving examples of these.	**Health, Well-being and Lifestyle** Explain why spending too much time online can negatively impact me.	**Health, Well-being and Lifestyle** Explain why spending too much time online can negatively impact me giving examples.	**Health, Well-being and Lifestyle** I know technology can be a distraction and strategies to limit time using technology.	**Health, Well-being and Lifestyle** To understand how technology can affect sleep and strategies to help this.	**Health, Well-being and Lifestyle** To describe common systems to regulate age-related content. Assess and monitor impact of technology on my health regulating this.
Online Bullying To describe ways people can be unkind online and how this makes others feel.	**Online Bullying** To describe ways people can be unkind online and how this makes others feel giving examples.	**Online Bullying** To describe ways people can be unkind online and how this makes others feel. Know how to talk to someone about help for online bullying.	**Online Bullying** Describe what and how online bullying takes place. Know rules about how to behave online.	**Online Bullying** Give examples of how online bullying takes place. Understand how it makes others feel and the impact on their reputation.	**Online Bullying** Give examples of how online bullying takes place. Know where to seek help, report the bullying and block abusive users.	**Online Bullying** To explain a range of ways to report online bullying both at home and in school.
Online relationships I can recognise the internet can be used to communicate.	**Online relationships** I can recognise the internet can be used to communicate and why it's important to be kind online.	**Online relationships** To give examples of how the internet can be used to communicate people e.g. email.	**Online relationships** To give examples of online communication and know the risks of these. Explain the differences for risk and trust between an online and real life relationship.	**Online relationships** Describe how to stay safe in a range of online social environments giving examples how to be respectful online.	**Online relationships** Describe how to communicate positively online and understand that some may want to do harm online.	**Online relationships** Understand well-being responsibilities to myself and others in my social group. Know how impulsive communications can cause harm online. Demonstrate how to support others and report problems online.
Self-image	**Self-image**	**Self-image**	**Self-image**	**Self-image**	**Self-image**	**Self-image**

To know that I can say 'No' in real life and online.	To know that I can say 'No' in real life and online giving examples of people to seek help from.	People's identity may be different online to in real life. Give examples of issues online that cause negative feelings. Describe ways people may make themselves look online.	Explain what is meant by 'identity' and ways that a person can be presented online e.g. using an avatar.	Explain online identity is different to real life and describe how online decisions can change the way people perceive me.	Understand how identity can be copied, modified or altered and demonstrate responsible choices.	Describe different feelings from the online world and how to support these. Identify how the media shapes ideas about gender and know how to seek help.
Online reputation To identify ways information is put online.	**Online reputation** Understand information can be copied and know when to ask an adult.	**Online reputation** Know information can last online for a long time and know when to ask an adult.	**Online reputation** Know to take care about the information I share online seeking support when unsure.	**Online reputation** Describe how others can find information online and explain how information can be created, copied or shared.	**Online reputation** Find and describe information about people online understanding that judgements can be made.	**Online reputation** Explain and develop ways to build a positive reputation online.
Managing information online Explain how the internet can help find information out.	**Managing information online** Use a simple search seeking help if unsure.	**Managing information online** Use search engines and navigate a simple web page. Explain voice activation e.g. Siri, Alexa, Google Now. Understand some information may not be true.	**Managing information online** Use key phrases in search engines explaining auto complete. Explain how the internet can be used to buy and sell things.	**Managing information online** To distinguish between a fact, opinion and belief. Describe methods used to encourage people to buy things online. Know that someone online might be a computer programme.	**Managing information online** Search and evaluate information online explaining what is meant by a 'hoax'. Know and explain the difference between mis-information and dis-information.	**Managing information online** Use search engines and understand how they rank sites. Analyse the validity of information understanding the 'manipulation', 'persuasion and 'influence' online. Identify, flag and report inappropriate content.
Ownership Name and know my work belongs to me.	**Ownership** Know how to save work that belongs to me.	**Ownership** Recognise content that belongs to others online.	**Ownership** Explain that copying others' work online without permission can cause problems.	**Ownership** Consider whether I have the right to use online content.	**Ownership** Assess and justify when it is acceptable to use work of others giving examples of when it is permitted to be reused.	**Ownership** Search online for content that can be used online. Demonstrate how to reference and acknowledge sources used online.
How do you think a farmer might use technology to look after the animals on the farm? How do you think the nurses and	What is coding? What is an instruction? What is debugging? In what ways can we sort?	What is an algorithm and why is it useful in coding? How can a database help	How can variables be used in coding? How can data be presented in suitable graphs? How can databases and branching	What are the stages of design, code, test and debug? How can variables and if/else	How can I sort data in databases to make it effective for understanding? How can product be calculated using a spreadsheet?	How can input be used in coding? How can advanced calculation in spreadsheets support real life use? Why do I build a positive online reputation?

other staff would use technology at the hospital? Etc. What is personal information? When can I say 'No'? How do people communicate on the Internet?	What is a spreadsheet? What is a password?	organise information? How can I search the Internet? What is an email? Why is spending too much time online bad for me?	databased help organise information? What is online identity? What information is safe to send by email?	statements be useful? How can continuous data be presented in a spreadsheet? What is the difference between a fact, opinion and belief? What is a search engine? How can I keep personal information private?	How can spreadsheets support budgeting? How do I seek help, report online bullying and block abusive users?	How can I self-regulate my well-being? What is the difference between the Internet and WWW? What is a blog?
	Instruction Algorithm Computer Program Debug Direction Arrow Backwards Forwards Right turn Left turn Action Design Mode Input	As Year 1 in addition to: Command Code block Code design Design mode Repeat Timer	As Year 2 in addition to: Action Event If Input Output Computer simulation Variable	As Year 3 in addition to: Control If/Else LOGO BK FD RT LT REPEAT SETPC SETPS PU PD	As Year 4 in addition to: Simulation Code design Design Mode Sequence Timer Variable	As Year 5 in addition to: As previous years in more complex coding situations
	Sort Criteria Pictogram Data Collate Cell Rows Spreadsheet Column Count tool	Copy Paste Columns Rows Equals tool Database	Advance mode spreadsheet <>= Communication Email Compose Send CC Attachment Branching database Data	Formula Wizard Formula Charts	Average Advance Mode Binary Tree Sort Group Arrange Statistics	Blog Blog page Collaborative

Personal information Trust Online Communicate	Log in/Log out Username Password Avatar Log out Tools Save Password Online safety E-safety search	Voice Webpage Identity Email Self-image bullying	Private Real life relationship Online Key phrases Search engine Auto complete Permission ownership	Imposter Strong password Online reputation Perception Fact Opinion Belief	Technology Well-being Hoax Mis-information Dis-information	Illegal Manipulation Persuasion Influence Validity Media Gender Social groups Impulsive Self-regulating

New learning