



The Ribblesdale Federation of Schools

Curriculum Handbook

(Cycle A)



Long Term Plan – Cycles of Units of Study

EYFS – Computing
<p>Practitioners will:</p> <ul style="list-style-type: none">• Provide opportunities to use technology to solve problems.• Provide opportunities for pupils to use technology to produce creative outcomes.• Provide opportunities to take part in a variety of tasks with digital devices such as Beebots.• Provide opportunities to use toys such as remote control cars, walkie talkies and interactive pets.• Provide opportunities to use digital cameras, voice recorders or microphones and iPads.

Year 1 Computing – Long Term Overview

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
(A)	Computing systems and networks Improving Mouse Skills Yr 1 5 Lessons	Creating media: Digital imagery	Programming 1 Algorithms Unplugged (Yr 1)	Programming 2 Programming Bee Bots	Data Handling Introduction to data (Yr 1)	Online Safety Yr 1 (4 Lessons)

Year 2 and 3 Computing – Long Term Overview

Kapow

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Yr A	Computing systems and networks 1 What is a computer? (Yr2)	Computing systems and networks 1 Networks (Yr 3)	Programming 1 Algorithms and debugging (Yr 2)	Programming Scratch Jr (Yr 2)	Programming Scratch Jr (Yr 3)	Online Safety (Yr 2)
Yr B	Online safety (Yr 3)	Computing systems and networks 2 Word Processing	Creating media Stop Motion Option 2: using desktops and laptops (Yr2) Update sequencing	Data Handling International Space Station (Yr 2)	Computing systems and networks 3 Journey inside a computer (Yr 3)	Data Handling Comparison cards databases Option 2: Microsoft Office 365 (Yr 3)

Years 4, 5 and 6 Computing – Long Term Overview
Kapow

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Cycle A	Computing systems and networks Collaborative Learning Option 1: Google Option 2: Microsoft Office 365 (Yr 4)	Programming 1 Programming music Option 1: Sonic Pi , Option 2: Scratch (Yr 5)	Computing systems and networks Search Engines (Yr 5)	Data handling Investigating Weather (Yr 4)	Skills showcase Inventing a Product (Yr 6)	Online Safety Online Safety (Yr 4)
Cycle B	Data handling Mars Rover 1 (Yr 5)	Creating Media Website design Option 1: Google Option 2: Microsoft Office 365 (Yr 4)	Programming Intro to python (Yr 6)	Programming 1 Further coding with Scratch Option 1: Google Option 2: Microsoft Office 365 (Yr 4)	Data Handling Big Data 1 (Yr 6)	Online safety Online safety Y5 (Yr 5)
Cycle C	Programming 2 Micro:Bit (yr 5)	Skills Showcase Mars Rover 2 (Yr 5)	Programming 2 Computational thinking (Yr 4)	Computer Networks and Systems Bletchley Park (Yr 6)	Creating media Stop motion animation Option 1: Stop motion studio Option 2: Using cameras (Yr 5)	Online safety Online safety Y6 (Yr 6)

Computing

Intent

All pupils have the right to have rich, deep learning experiences that balance all the aspects of computing. With technology playing such a significant role in society today, we believe ‘Computational thinking’ is a skill children must be taught if they are to be able to participate effectively and safely in this digital world. A high-quality computing education equips pupils to use 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. During their time at school, pupils are introduced to a wide range of technology, including laptops, iPads and interactive whiteboards, allowing them to continually practice and improve the skills they learn. This ensures they become digitally literate so that they are able to express themselves and develop their ideas through information and computer technology – at a level suitable for the future workplace and as active participants in a digital world.

We teach a curriculum that enables children to become effective users of technology who can:

- Understand and apply the essential principles and concepts of Computer Science, including logic, algorithms and data representation;
- Analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems;
- Evaluate and apply information technology analytically to solve problems;
- Communicate ideas well by utilising appliances and devices throughout all areas of the curriculum.

Internet Safety

We take internet safety extremely seriously. We have an E- Safety Policy that provides guidance for teachers and children about how to use the internet safely. Every year group participates in lessons on e-safety and children understand how to stay safe when using technology

Pupils with SEND

To support pupils with SEND to access a full computing curriculum, we use a range of approaches which include, but are not limited to: pre-teaching subject-specific vocabulary, use of visual aids, scaffolding resources such as writing frames, additional thinking time, additional adult support, alternative means to record responses, task breakdown plans, use of vocabulary mats and targeted questioning.

EYFS

This subject leader handbook is for the national curriculum. There is a separate EYFS handbook which shows the EYFS long-term curriculum. The EYFS curriculum is holistic and therefore a number of areas of learning will link to this subject and support children to be immersed in Computing.

Implementation

To ensure high standards of teaching and learning in computing, we implement a curriculum that is progressive throughout the whole school. Our implementation of the computing curriculum is in line with 2014 Primary National Curriculum requirements for KS1 and KS2 and the Foundation Stage Curriculum in England. This provides a broad framework and outlines the knowledge and skills taught in each key stage.

We use and follow the Kapow scheme of work from Year 1-6, ensuring consistency and progression throughout the school. The scheme of work enables clear coverage of the computing curriculum whilst also providing support and CPD for less confident teachers to deliver lessons.

The lessons are broken down into weekly units, usually with two units taught per half term. Units are practical and engaging and allow computing lessons to be hands on. Units cover a broad range of computing components such as coding, spreadsheets, Internet and Email, Databases, Communication networks, animation and online safety.

When teaching computing, teachers can adapt lessons to follow the children's interests to ensure their learning is engaging, broad and balanced. Teachers ensure that computing capability is also achieved through core and foundation subjects and where appropriate and necessary computing should be incorporated into work for all subjects where possible.

Computing teaching is practical and engaging and lessons can be adapted based on teacher judgement and pupil ability. Teachers and pupils are aware of the importance of health and safety and pupils are always supervised when using technology and accessing the internet.

We provide a variety of opportunities for computing learning inside and outside the classroom. Computing and safeguarding go hand in hand and we provide a huge focus on internet safety inside and outside of the classroom. All pupils studying an online safety unit through their computing

lessons and we also take part in annual National Safer Internet Day in February. The Computing subject leader, alongside class teachers, will plan additional internet safety lessons and activities.

Impact

Our Computing curriculum is high quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:

- A reflection on standards achieved against the planned outcomes
- Children can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation;
- Children can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems;
- Children can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems;
- Children are responsible, competent, confident and creative users of information and communication technology.
- Pupil discussions about their learning;

National Curriculum

Key stage 1

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.

Key stage 2

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 A – Computing systems and networks

Improving Mouse Skills

Yr 1

	In Year 1 we...
	<p>Skills</p> <p>Learning how to explore and tinker with hardware to find out how it works. Learning where keys are located on the keyboard. Using a basic range of tools within graphic editing software. Developing control of the mouse through dragging, clicking and resizing of images to create different effects. Developing understanding of different software tools. Recognising devices that are connected to the internet. Logging in and out and saving work on their own account.</p> <p>Knowledge</p> <p>Log in and log out means to begin and end a connection with a computer A computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. Passwords are important for security and to keep us safe.</p>
Suggested enrichment ideas	

Year A – Programming 1

Algorithms Unplugged

(Yr 1)

	In Year 1 we...
	<p>Skills</p> <p>Recognising that some devices are input devices and others are output devices.</p> <p>Learning that decomposition means breaking a problem down into smaller parts.</p> <p>Using decomposition to solve unplugged challenges.</p> <p>Developing the skills associated with sequencing in unplugged activities.</p> <p>Following a basic set of instructions.</p> <p>Assembling instructions into a simple algorithm.</p> <p>Learning to debug instructions when things go wrong.</p> <p>Learning to debug an algorithm in an unplugged scenario.</p> <p>Knowledge</p> <p>An algorithm is when instructions are put in an exact order.</p> <p>Decomposition means breaking a problem into manageable chunks and that is important in computing.</p> <p>We call errors in an algorithm are called bugs and fixing these is called debugging.</p>
Suggested enrichment ideas	

Year A – Skills Show case
Rocket to the moon
Yr 1
(5 lessons)

	In Year 1 we...
	<p><u>Skills</u></p> <p>Learning where keys are located on the keyboard. Learning how to operate a camera to take photos and videos. Using logical reasoning to predict the behaviour of simple programs. Developing the skills associated with sequencing in unplugged activities. Following a basic set of instructions. Assembling instructions into a simple algorithm. Learning to debug instructions when things go wrong. Learning to debug an algorithm in an unplugged scenario.</p> <p><u>Knowledge</u></p> <p>To know that when we create something on a computer it can be more easily saved and shared than a paper version. To know some of the simple graphic design features of a piece of online software. To know that a spreadsheet is an electronic ‘table’ for sorting data.</p>

Suggested enrichment ideas

Year A – Programming 2

Programming Bee Bots Yr 1

	In Year 1 we...
	<p><u>Skills</u></p> <p>Learning how to explore and tinker with hardware to find out how it works.</p> <p>Learning how to operate a camera to take photos and videos.</p> <p>Using decomposition to solve unplugged challenges.</p> <p>Using logical reasoning to predict the behaviour of simple programs.</p> <p>Developing the skills associated with sequencing in unplugged activities.</p> <p>Following a basic set of instructions.</p> <p>Assembling instructions into a simple algorithm.</p> <p>Programming a floor robot to follow a planned route.</p> <p><u>Knowledge</u></p> <p>The basic functions of a Bee-Bot.</p> <p>You can use a camera/tablet to make simple videos.</p> <p>Algorithms move a Bee-Bot accurately to a chosen destination.</p>
Suggested enrichment ideas	

Year A – Online Safety

Online Safety Yr 1

(4 Lessons)

	In Year 1 we...
	<p>Skills</p> <p>Recognising devices that are connected to the internet.</p> <p>Understanding that we are connected to others when using the internet.</p> <p>Understanding some of the ways we can use the internet.</p> <p>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.</p> <p>Understanding how to interact safely with others online.</p> <p>Recognising how actions on the internet can affect others.</p> <p>Recognising what a digital footprint is and how to be careful about posting online.</p> <p>Discussing ways to balance time spent online and offline.</p> <p>Knowledge</p> <p>To know that the internet is many devices connected to one another.</p> <p>To know what to do if you feel unsafe or worried online – tell a trusted adult.</p> <p>To know that people you do not know on the internet (online) are strangers and are not always who they say they are.</p> <p>To know that to stay safe online it is important to keep personal information safe.</p> <p>To know that ‘sharing’ online means giving something specific to someone else via the internet and ‘posting’ online means placing information on the internet.</p>
Suggested enrichment ideas	

Year A – Data Handling

Introduction to data

(Yr 1)

	In Year 1 we...
	<p><u>Skills</u></p> <p>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. Developing control of the mouse through dragging, clicking and resizing of images to create different effects. Developing understanding of different software tools. Recognising devices that are connected to the internet. Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. Using data representations to answer questions about data.</p> <p><u>Knowledge</u></p> <p>To know that charts and pictograms can be created using a computer. To understand that a branching database is a way of classifying a group of objects. To know that computers understand different types of 'input'.</p>
Suggested enrichment ideas	

Year A – Computing systems and networks 1

What is a computer?

In Year 2 we...	In Year 3 we...
<p>Skills</p> <p>Understanding what a computer is and that it's made up of different components.</p> <p>Recognising that buttons cause effects and that technology follows instructions.</p> <p>Learning how we know that technology is doing what we want it to do via its output.</p> <p>Using greater control when taking photos with cameras, tablets or computers.</p> <p>Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.</p> <p>Using word processing software to type and reformat text.</p> <p>Creating and labelling images.</p> <p>Learning how computers are used in the wider world</p>	<p>Skills</p> <p>Understanding what a computer is and that it's made up of different components.</p> <p>Recognising that buttons cause effects and that technology follows instructions.</p> <p>Learning how we know that technology is doing what we want it to do via its output.</p> <p>Using greater control when taking photos with cameras, tablets or computers.</p> <p>Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.</p> <p>Using word processing software to type and reformat text.</p> <p>Creating and labelling images.</p> <p>Learning how computers are used in the wider world</p>
<p>Key knowledge</p> <p>To know:</p> <p>The difference between a desktop and a laptop computer.</p> <p>People control technology.</p> <p>Some input devices that give a computer an instruction about what to do (output).</p> <p>Computers often work together.</p>	<p>Key knowledge</p> <p>To know:</p> <p>The difference between a desktop and a laptop computer.</p> <p>People control technology.</p> <p>Some input devices that give a computer an instruction about what to do (output).</p> <p>Computers often work together.</p>
<p><u>Suggested enrichment ideas</u></p>	

Year A – Computing systems and networks 1

Networks

(yr 3)

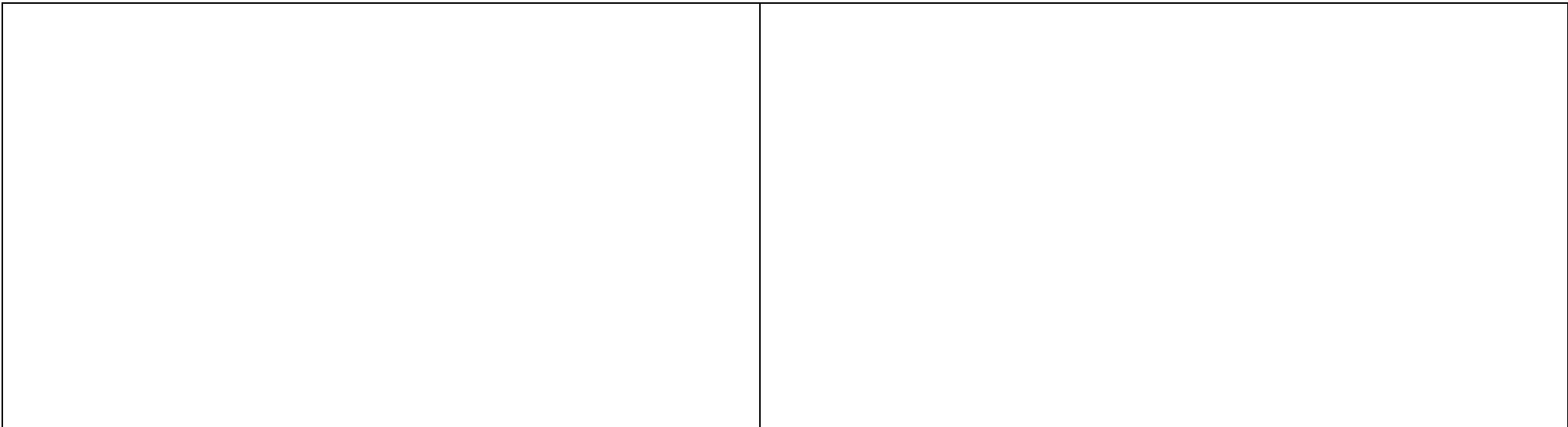
In Year 2 we...	In Year 3 we...
<p>Key Skills</p> <p>Learning about the purpose of routers.</p> <p>Understanding that websites and videos are files that are shared from one computer to another.</p> <p>Understanding how networks work and their purpose.</p> <p>Identifying the key components within a network, including whether they are wired or wireless.</p> <p>Recognising links between networks and the internet.</p> <p>Learning how data is transferred.</p> <p>Key knowledge</p> <p>To know:</p> <p>To understand that a network is a group of interconnected devices.</p> <p>To know that a server is central to a network and responds to requests made.</p> <p>To know that the internet connects all the networks around the world.</p> <p>To know that a router connects us to the internet.</p>	<p>Key skills</p> <p>Learning about the purpose of routers.</p> <p>Understanding the role of the key components of a network.</p> <p>Understanding that websites and videos are files that are shared from one computer to another.</p> <p>Learning about the role of packets.</p> <p>Understanding how networks work and their purpose.</p> <p>Identifying the key components within a network, including whether they are wired or wireless.</p> <p>Recognising links between networks and the internet.</p> <p>Learning how data is transferred.</p> <p>Key knowledge</p> <p>To understand that a network is a group of interconnected devices.</p> <p>To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices).</p> <p>To know that a server is central to a network and responds to requests made.</p> <p>To know that the internet connects all the networks around the world.</p> <p>To know that a router connects us to the internet.</p> <p>To know what a packet is and why it is important for website data transfer.</p>

Year A – Data Handling International Space Station (yr 2)

In Year 2 we...	In Year 3 we...
<p>Key Skills</p> <p>Developing confidence with the keyboard and the basics of touch typing.</p> <p>Creating and labelling images.</p> <p>Collecting and inputting data into a spreadsheet.</p> <p>Interpreting data from a spreadsheet.</p> <p>Learning how computers are used in the wider world.</p> <p>Key knowledge</p> <p>To know:</p> <p>To understand that you can enter simple data into a spreadsheet.</p> <p>To understand what steps you need to take to create an algorithm.</p> <p>To know what data to use to answer certain questions.</p> <p>To know that computers can be used to monitor supplies.</p>	<p>Key skills</p> <p>Develop a growing confidence with the keyboard and the basics of touch typing.</p> <p>Accurately create and labelling images.</p> <p>Collecting and inputting data into a spreadsheet.</p> <p>Interpreting data from a spreadsheet.</p> <p>Learning how computers are used in the wider world</p> <p>Key knowledge</p> <p>To understand that you can enter simple data into a spreadsheet.</p> <p>To understand what steps you need to take to create an algorithm.</p> <p>To know what data to use to answer certain questions.</p> <p>To know that computers can be used to monitor supplies.</p>

Year A – Programming Scratch Jr (Yr 2)

In Year 2 we...	In Year 3 we...
<p>Key Skills</p> <p>Key skills</p> <p>Recognising that buttons cause effects and that technology follows instruction.</p> <p>Explaining what an algorithm is.</p> <p>Following an algorithm.</p> <p>Creating a clear and precise algorithm.</p> <p>Learning that programs execute by following precise instructions.</p> <p>Incorporating loops within algorithms.</p> <p>Using logical thinking to explore software, predicting, testing and explaining what it does.</p> <p>Using an algorithm to write a basic computer program.</p> <p>Using loop blocks when programming to repeat an instruction more than once.</p> <p>Using software (and unplugged means) to create story animations.</p> <p>Key knowledge</p> <p>To know:</p> <p>To know that coding is writing in a special language so that the computer understands what to do.</p> <p>To understand that the character in Scratch Jr is controlled by the programming blocks.</p> <p>To know that you can write a program to create a musical instrument.</p>	<p>Key skills</p> <p>Recognising that buttons cause effects and that technology follows instruction.</p> <p>Explaining what an algorithm is.</p> <p>Following an algorithm.</p> <p>Creating a clear and precise algorithm.</p> <p>Learning that programs execute by following precise instructions.</p> <p>Incorporating loops within algorithms.</p> <p>Using logical thinking to explore software, predicting, testing and explaining what it does.</p> <p>Using an algorithm to write a basic computer program.</p> <p>Using loop blocks when programming to repeat an instruction more than once.</p> <p>Using software (and unplugged means) to create story animations</p> <p>Key knowledge</p> <p>To know that coding is writing in a special language so that the computer understands what to do.</p> <p>To understand that the character in Scratch Jr is controlled by the programming blocks.</p> <p>To know that you can write a program to create a musical instrument</p>



Year A – Stop Motion Option 1 – Using Tablets

In Year 2 we...	In Year 3 we...
<p>Key Skills</p> <p>Using greater control when taking photos with cameras, tablets or computers.</p> <p>Using logical thinking to explore software, predicting, testing and explaining what it does.</p> <p>Key knowledge</p> <p>To know:</p> <p>To understand that an animation is made up of a sequence of photographs.</p> <p>To know that small changes in my frames will create a smoother looking animation.</p> <p>To understand what software creates simple animations and some of its features e.g. onion skinning.</p>	<p>Key Skills</p> <p>Using greater control when taking photos with cameras, tablets or computers.</p> <p>Using logical thinking to explore software, predicting, testing and explaining what it does.</p> <p>Key knowledge</p> <p>e</p> <p>To know:</p> <p>To understand that an animation is made up of a sequence of photographs.</p> <p>To know that small changes in my frames will create a smoother looking animation.</p> <p>To understand what software creates simple animations and some of its features e.g. onion skinning.</p>

Year A – Online Safety (Yr 2)

In Year 2 we...	In Year 3 we...
<p>Key Skills</p> <p>.Identifying whether information is safe or unsafe to be shared online.</p> <p>Learning how to create a strong password.</p> <p>Learning to be respectful of others when sharing online and ask for their permission before sharing content.</p> <p>Learning strategies for checking if something they read online is true.</p> <p>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.</p> <p>Key knowledge</p> <p>To understand the difference between online and offline.</p> <p>To understand what information I should not post online.</p> <p>To know how to create a strong password.</p> <p>To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'</p> <p>To understand that not everything I see or read online is true.</p>	<p>Key Skills</p> <p>.Identifying whether information is safe or unsafe to be shared online.</p> <p>Learning how to create a strong password.</p> <p>Learning to be respectful of others when sharing online and ask for their permission before sharing content.</p> <p>Learning strategies for checking if something they read online is true.</p> <p>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.</p> <p>Key knowledge</p> <p>To understand the difference between online and offline.</p> <p>To understand what information I should not post online.</p> <p>To know how to create a strong password.</p> <p>To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'</p> <p>To understand that not everything I see or read online is true</p>

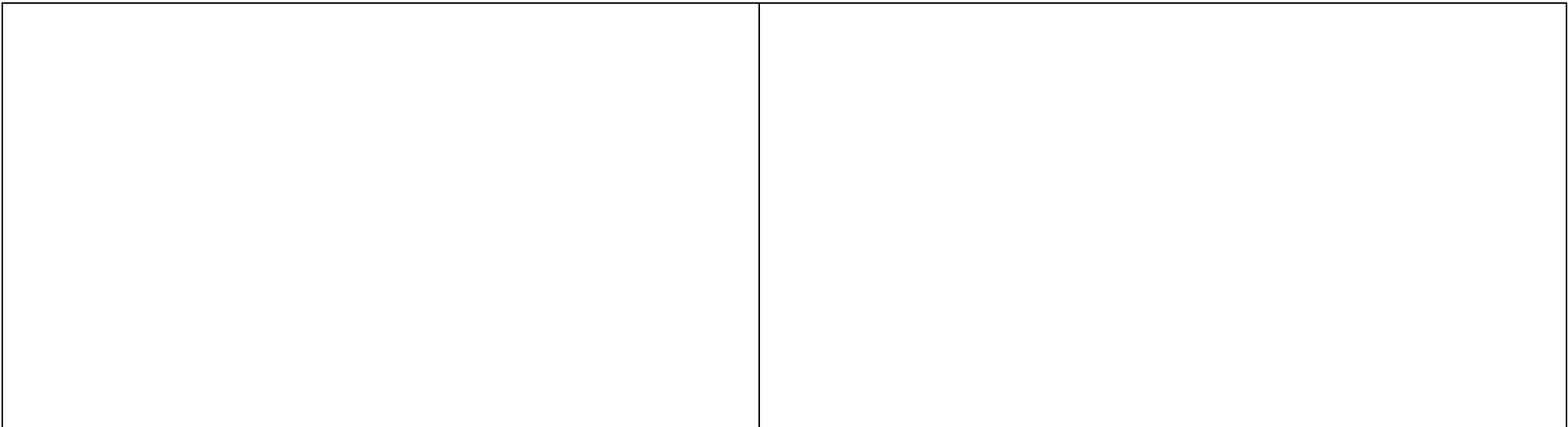
Year A – Collaborative Learning (Yr 4)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.</p> <p>Use online software for documents, presentations, forms and spreadsheets.</p> <p>Using software to work collaboratively with others.</p> <p>Understanding that software can be used collaboratively online to work as a team.</p> <p>Recognising what appropriate behaviour is when collaborating with others online.</p> <p>Key knowledge</p> <p>To understand that software can be used collaboratively online to work as a team.</p> <p>To know what type of comments and suggestions on a collaborative document can be helpful.</p> <p>To know that you can use images, text, transitions and animation in presentation slides.</p>	<p>Key skills</p> <p>Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.</p> <p>Use online software for documents, presentations, forms and spreadsheets.</p> <p>Using software to work collaboratively with others.</p> <p>Understanding that software can be used collaboratively online to work as a team.</p> <p>Recognising what appropriate behaviour is when collaborating with others online.</p> <p>Key knowledge</p> <p>To understand that software can be used collaboratively online to work as a team.</p> <p>To know what type of comments and suggestions on a collaborative document can be helpful.</p> <p>To know that you can use images, text, transitions and animation in presentation slides.</p>

Year A – Programming 1

Programming music Option 1: Sonic Pi , (Yr 5)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Predicting how software will work based on previous experience.</p> <p>Writing more complex algorithms for a purpose.</p> <p>Iterating and developing their programming as they work.</p> <p>Confidently using loops in their programming.</p> <p>Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.</p> <p>Writing code to create a desired effect.</p> <p>Using a range of programming commands.</p> <p>Using repetition within a program.</p> <p>Amending code within a live scenario.</p> <p>Using logical thinking to explore software more independently, making predictions based on their previous experience.</p> <p>Using a software programme (Sonic Pi) to create music.</p> <p>Identify ways to improve and edit programs, videos, images etc.</p> <p>Key knowledge</p> <p>To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.</p> <p>To understand that using loops can make the process of writing music simpler and more effective.</p> <p>To know how to adapt their music while performing.</p>	<p>Key skills</p> <p>Predicting how software will work based on previous experience.</p> <p>Writing more complex algorithms for a purpose.</p> <p>Iterating and developing their programming as they work.</p> <p>Confidently using loops in their programming.</p> <p>Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.</p> <p>Writing code to create a desired effect.</p> <p>Using a range of programming commands.</p> <p>Using repetition within a program.</p> <p>Amending code within a live scenario.</p> <p>Using logical thinking to explore software more independently, making predictions based on their previous experience.</p> <p>Using a software programme (Sonic Pi) to create music.</p> <p>Identify ways to improve and edit programs, videos, images etc.</p> <p>Key knowledge</p> <p>To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.</p> <p>To understand that using loops can make the process of writing music simpler and more effective.</p> <p>To know how to adapt their music while performing.</p>



Year A – Computing systems and networks

Search Engines

(Yr 5)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Developing searching skills to help find relevant information on the internet.</p> <p>Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns.</p> <p>Learn about different forms of communication that have developed with the use of technology.</p> <p>Recognising that information on the Internet might not be true or correct and learning ways of checking validity.</p> <p>Key knowledge</p> <p>To know how search engines work.</p> <p>To understand that anyone can create a website and therefore we should take steps to check the validity of websites.</p> <p>To know that web crawlers are computer programs that crawl through the internet.</p> <p>To understand what copyright is.</p>	<p>Key skills</p> <p>Developing searching skills to help find relevant information on the internet.</p> <p>Learning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns.</p> <p>Learn about different forms of communication that have developed with the use of technology.</p> <p>Recognising that information on the Internet might not be true or correct and learning ways of checking validity.</p> <p>Key knowledge</p> <p>To know how search engines work.</p> <p>To understand that anyone can create a website and therefore we should take steps to check the validity of websites.</p> <p>To know that web crawlers are computer programs that crawl through the internet.</p> <p>To understand what copyright is.</p>

Year A – Data handling

Investigating Weather

(Yr 4)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Using tablets or digital cameras to film a weather forecast.</p> <p>Understanding that weather stations use sensors to gather and record data that predicts the weather.</p> <p>Using keywords to effectively search for information on the internet.</p> <p>Searching the internet for data.</p> <p>Designing a device that gathers and records sensor data.</p> <p>Recording data in a spreadsheet independently.</p> <p>Sorting data in a spreadsheet to compare using the 'sort by...' option.</p> <p>Understanding that data is used to forecast weather.</p> <p>Key knowledge</p> <p>To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data').</p> <p>To know that a weather machine is an automated machine that respond to sensor data.</p> <p>To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.</p>	<p>Key skills</p> <p>Using tablets or digital cameras to film a weather forecast.</p> <p>Understanding that weather stations use sensors to gather and record data that predicts the weather.</p> <p>Using keywords to effectively search for information on the internet.</p> <p>Searching the internet for data.</p> <p>Designing a device that gathers and records sensor data.</p> <p>Recording data in a spreadsheet independently.</p> <p>Sorting data in a spreadsheet to compare using the 'sort by...' option.</p> <p>Understanding that data is used to forecast weather.</p> <p>Key knowledge</p> <p>To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data').</p> <p>To know that a weather machine is an automated machine that respond to sensor data.</p> <p>To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.</p>

Year A – Skills showcase

Inventing a Product

(Yr 6)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Using past experiences to help solve new problems.</p> <p>Writing increasingly complex algorithms for a purpose.</p> <p>Debugging quickly and effectively to make a program more efficient.</p> <p>Remixing existing code to explore a problem.</p> <p>Changing a program to personalise it.</p> <p>Evaluating code to understand its purpose.</p> <p>Predicting code and adapting it to a chosen purpose.</p> <p>Using logical thinking to explore software independently, iterating ideas and testing continuously.</p> <p>Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions.</p> <p>Using design software TinkerCAD to design a product.</p> <p>Creating a website with embedded links and multiple pages.</p> <p>Understanding how search engines work.</p> <p>Using search engines safely and effectively.</p> <p>Key knowledge</p> <p>To know what designing an electronic product involves.</p> <p>To know which programming software/language is best to achieve a purpose.</p> <p>To know the building blocks of computational thinking e.g. sequence, selection, repetition, variables and inputs and output</p>	<p>Key skills</p> <p>Using past experiences to help solve new problems.</p> <p>Writing increasingly complex algorithms for a purpose.</p> <p>Debugging quickly and effectively to make a program more efficient.</p> <p>Remixing existing code to explore a problem.</p> <p>Changing a program to personalise it.</p> <p>Evaluating code to understand its purpose.</p> <p>Predicting code and adapting it to a chosen purpose.</p> <p>Using logical thinking to explore software independently, iterating ideas and testing continuously.</p> <p>Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions.</p> <p>Using design software TinkerCAD to design a product.</p> <p>Creating a website with embedded links and multiple pages.</p> <p>Understanding how search engines work.</p> <p>Using search engines safely and effectively.</p> <p>Key knowledge</p> <p>To know what designing an electronic product involves.</p> <p>To know which programming software/language is best to achieve a purpose.</p> <p>To know the building blocks of computational thinking e.g. sequence, selection, repetition, variables and inputs and output</p>

Year A – Online Safety

Online Safety

(Yr 4)

In Year 4 we...	In Year 5 and 6 we...
<p>Key skills</p> <p>Understanding why some results come before others when searching.</p> <p>Understanding that information found by searching the internet is not all grounded in fact.</p> <p>Learning to make judgements about the accuracy of online searches.</p> <p>Identifying forms of advertising online.</p> <p>Reflecting on the positives and negatives of time online.</p> <p>Identifying respectful and disrespectful online behaviour.</p> <p>Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.</p> <p>Key knowledge</p> <p>To know:</p> <p>Some of the methods used to encourage people to buy things online.</p> <p>Technology can be designed to act like or impersonate living things.</p> <p>Technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.</p> <p>What behaviours are appropriate to stay safe and be respectful online.</p>	<p>Key skills</p> <p>Understanding why some results come before others when searching.</p> <p>Understanding that information found by searching the internet is not all grounded in fact.</p> <p>Learning to make judgements about the accuracy of online searches.</p> <p>Identifying forms of advertising online.</p> <p>Reflecting on the positives and negatives of time online.</p> <p>Identifying respectful and disrespectful online behaviour.</p> <p>Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.</p> <p>Key knowledge</p> <p>To know:</p> <p>Some of the methods used to encourage people to buy things online.</p> <p>Technology can be designed to act like or impersonate living things.</p> <p>Technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.</p> <p>What behaviours are appropriate to stay safe and be respectful online.</p>

Agreed End Points

We have plotted end points for each year group to ensure that children keep on track for the end of Key Stage end points. In this way we can get children ready for the next stage of their education

Our end points ensure that our curriculum is purposefully structured and logically sequenced, and new knowledge builds on previous knowledge – links can be made across different areas of study.

Computing	Year One	Year Two
Text and Multimedia	<ul style="list-style-type: none"> Work with others and with support to contribute to a digital class resource which includes text, graphic and sound. 	<ul style="list-style-type: none"> Generate their own work, (with help where appropriate with multimedia) combining text, graphics and sound. Save and retrieve and edit their work.
Digital Images	<ul style="list-style-type: none"> Use a range of simple tools in a paint package / image manipulation software to create / modify a picture. 	<ul style="list-style-type: none"> Use a range of tools in a paint package / image manipulation software to create / modify a picture to communicate an idea. Create a simple animation to tell a story.
Sound and Music	<ul style="list-style-type: none"> Choose suitable sounds from a bank to express their ideas. Record short speech. 	<ul style="list-style-type: none"> Compose music from icons. Produce a simple presentation incorporating sounds the children have captured, or created.
Electronic Communication	<ul style="list-style-type: none"> Contribute ideas to a class email to another class / school etc. 	<ul style="list-style-type: none"> Work collaboratively by email to share and request information of another class or story character.
Research and ESafety	<ul style="list-style-type: none"> As a class exercise children explore information from a variety of sources (electronic, paper based, observations of the world around them, etc.). <p>PSHE Links</p> <p>H12 – To know rules for keeping physically and emotionally safe including responsible ICT use and online safety.</p> <p>H16 – To know what is meant by ‘privacy’ their right to keep things private, the importance of respecting others’ privacy.</p> <p>R13 – To recognise different types of teasing and bullying (including online)</p>	<ul style="list-style-type: none"> Children use a search engine to find specific relevant information to use in a presentation for a topic. <p>PSHE Links</p> <p>H12 – To know rules for keeping physically and emotionally safe including responsible ICT use and online safety.</p> <p>H16 – To know what is meant by ‘privacy’ their right to keep things private, the importance of respecting others’ privacy.</p> <p>R13 – To recognise different types of teasing and bullying (including online)</p>
Control and Algorithms	<ul style="list-style-type: none"> Control simple everyday devices to make them produce different outcomes. 	<ul style="list-style-type: none"> Control a device, on and off screen, making predictions about the effect their programming will have.

Computing	Year One	Year Two
Handling Information	As a class or individually with support, children use a simple pictogram or painting program to develop simple graphical awareness / one to one correspondence.	<ul style="list-style-type: none"> Use a graphing package to collect, organise and classify data, selecting appropriate tools to create a graph and answer questions. Enter information into a simple branching database, database or word processor and use it to answer questions. They save, retrieve and edit their work.
Modelling	Make simple choices to control a simple simulation program.	<ul style="list-style-type: none"> Children are able to play an adventure game and use a simple simulation, making choices and observing the results. Their conversation shows they understand that computers are good at replicating real life events and allowing them to explore contexts that are otherwise not possible.
Data Logging	•	•
Individual Technologies	Show an awareness of the range of devices and tools they encounter in everyday life	<ul style="list-style-type: none"> Show an awareness of a range of inputs to a computer (IWB, mouse touch screen, microphone, keyboard, etc.)
Understanding Technologies (network)	how an awareness that what they create on a computer or tablet device can be shown to others via another device (e.g. printer, projector, Apple TV)	<ul style="list-style-type: none"> Begin to show an awareness that computers can be linked to share resources

Understanding Technologies (the internet)		Use websites and demonstrate an awareness of how to manage their journey around them (e.g. using the back/forward button, hyperlinks)
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Computing	Year Three	Year Four
Texts and Multimedia	<ul style="list-style-type: none"> Record and present information integrating a range of appropriate media combining text and graphics in printable form and sound and video for on-screen presentations which include hyperlinks. Begin to show an awareness of the intended audience and seek feed-back. 	<ul style="list-style-type: none"> Use advanced tools in word processing / DTP software such as tabs, appropriate text formatting, line spacing etc. appropriately to create quality presentations appropriate for a known audience.
Digital Images	<ul style="list-style-type: none"> Manipulate digital images using a range of tools in appropriate software to convey a specific mood or idea. 	<ul style="list-style-type: none"> Make a short film / animation from images (still and / or moving) that they have sourced, captured or created.
Sound and Music	<ul style="list-style-type: none"> Create a simple podcast, selecting and importing already existing music and sound effects as well as recording their own. 	<ul style="list-style-type: none"> Create multiple track compositions that contain a variety of sounds.
Electronic Communication	<ul style="list-style-type: none"> Begin to understand the need to abide by school e-safety rules. 	<ul style="list-style-type: none"> Share ICT work they have done electronically by email, VLE, or uploading to authorised sites. Where possible seek and respond to feedback.
Research and ESafety	<ul style="list-style-type: none"> Using another curriculum area as a starting point, children ask their own questions then use ICT sources to find answers, making use of search engines, an index, menu, hyperlinks as appropriate. Children use the information or resources they have found. 	<ul style="list-style-type: none"> Make use of copy and paste, beginning to understand the purpose of copyright regulations and the need to repurpose information for a particular audience. They show an understanding that not all information on the internet is accurate.

	<p>PSHE Links</p> <p>H22 – Develop strategies for keeping safe online; the importance of protecting personal information.</p> <p>H25 – To know how to manage requests for images of themselves or others; what is and is not appropriate to ask for or share ; who to talk to if they feel uncomfortable.</p>	<p>PSHE Links</p> <p>H22 – Develop strategies for keeping safe online; the importance of protecting personal information.</p> <p>H25 – To know how to manage requests for images of themselves or others; what is and is not appropriate to ask for or share ; who to talk to if they feel uncomfortable.</p>
Control and Algorithms	<ul style="list-style-type: none"> Children are able to type a short sequence of instructions and to plan ahead when programming devices on and off screen. 	<ul style="list-style-type: none"> Use control software to control devices (using output commands) or to simulate this on screen. Predict, test and refine their programming.

Computing	Year Three	Year Four
Handling Information	<ul style="list-style-type: none"> Children use a simple database (the structure of which has been set up for them) to enter and save and save information on a given subject. They follow straight forward lines of enquiry to search their data for their own purposes. They talk about their experiences of using ICT to process data compared with other methods. 	<ul style="list-style-type: none"> Children work as a class or group to create a data collection sheet and use it to setup a straight forward database to answer questions. Enter information and interrogate it (by searching, sorting, graphing etc.). Begin to reflect on how useful the collected data and their interrogation was and whether or not their questions were answered.
Modelling	<ul style="list-style-type: none"> Use models and simulations to find things out and solve problems. Recognise that simulations are useful in widening experience beyond the classroom. Make simple use of a spreadsheet to store data and produce graphs. 	<ul style="list-style-type: none"> Set up and use a spreadsheet model to explore patterns and relationships. Make predictions. Know how to enter simple formulae to assist this process.

Data Logging	<ul style="list-style-type: none"> Begin to use a data logger to sense physical data (sound, light, temperature). 	<ul style="list-style-type: none"> Use a data logger confidently, connected to the computer or remotely, to capture continuous or intermittent data readings. Interpret the results and use these in their investigations.
Individual Technologies	<ul style="list-style-type: none"> Begin to show discernment in their use of computing devices and tools for a particular purpose and explain why their choice was made. <p>PSHE Links – H24 To develop the responsible use of mobile phones; safekeeping and safer use habits (time limits, use of passcodes, turning off at night)</p>	<ul style="list-style-type: none"> Make choices about the devices and tools they use for specific purposes and explain them in relation to the context. <p>PSHE Links – H24 To develop the responsible use of mobile phones; safekeeping and safer use habits (time limits, use of passcodes, turning off at night)</p>
Understanding Technologies (network)	<ul style="list-style-type: none"> Show an awareness of where passwords are critical in everyday use (e.g. parents accessing bank details) 	<ul style="list-style-type: none"> Show an understanding of the school network and how it links computers to resources in school and beyond.
Understanding Technologies (the internet)	<ul style="list-style-type: none"> Show an awareness that not all the resources/tools they use are resident on the device they are using. 	<ul style="list-style-type: none"> Perform a search using different search engines and check the results against each other, explaining why they might be different.

Computing	Year Five & Year Six Consolidation of previous skills and knowledge
Texts and Multimedia	Multimedia work shows restrained use of effects that help to convey meaning rather than impress.
Digital Images	Use images that they have sourced / captured / manipulated as part of a bigger project (e.g. presentation or document).
Sound and Music	Create and share more sophisticated podcasts and consider the effect that their podcasts will have on the audience.
Electronic Communication	Abide by school rules for e-safety – share this information with younger pupils. Follow these rules at home, considering safe and appropriate use of social media.
Research and ESafety	<ul style="list-style-type: none"> Independently and with due regard for safety, search the internet using a variety of techniques to find a range of information and resources on a specific topic. <ul style="list-style-type: none"> Use appropriate methods to validate information and check for bias and accuracy. Repurpose and make appropriate use of selected resources for a given audiences, acknowledging material used where appropriate. <p>PSHE Links</p> <p>H22 – Develop strategies for keeping safe online; the importance of protecting personal information.</p> <p>H25 – To know how to manage requests for images of themselves or others; what is and is not appropriate to ask for or share ; who to talk to if they feel uncomfortable.</p>
Control and Algorithms	<ul style="list-style-type: none"> Independently create sequences of commands to control devices in response to sensing (i.e. use inputs as well as outputs). Design, build, test, evaluate and modify the system; ensuring that it is fit for purpose.

Computing	Year Five & Year Six Consolidation of previous skills and knowledge
Handling Information	<ul style="list-style-type: none"> Independently solve a problem by planning and carrying out data collection, by organising and analysing data involving complex searches using a database, and by drawing conclusions and presenting findings. The need for accuracy is demonstrated and strategies for spotting implausible data are evident. To be able to talk about issues relating to data protection and the need for data security in the world at large (e.g. health, police databases).
Modelling	<ul style="list-style-type: none"> Set up and use their own spreadsheet, which contains formulae to investigate mathematical models. Ask "what if ..." questions and change variable in their model. Understand the need for accuracy when creating formulae and check regularly for mistakes, by questioning results. Relate their use of spreadsheets to model situations to the wider world.
Data Logging	<ul style="list-style-type: none"> To identify their own opportunities for data logging and carry out their own experiments. They check and question results and are able to spot trends in data and identify when problems may have occurred.
Individual Technologies	<ul style="list-style-type: none"> Evaluate the tools available to them including any that are unfamiliar or new and use them to solve problems. Demonstrate an awareness of the appropriateness of outcomes depending on choices regarding tools and devices. <p>PSHE Links – H24 To develop the responsible use of mobile phones; safekeeping and safer use habits (time limits, use of passcodes, turning off at night)</p>
Understanding Technologies (network)	<ul style="list-style-type: none"> Show an understanding of how filtering and monitoring tools affect their use of the school network and Internet and compare this with their experience of access outside school.
Understanding Technologies (the internet)	<ul style="list-style-type: none"> Use collaborative tools and e-mail showing a sensitivity for this type of remote collaboration and communication