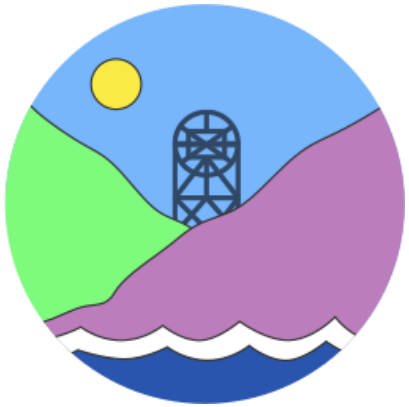
Lingdale Primary School



Computing Curriculum

Computing Curriculum Intent:

At Lingdale Primary School, we give the children the skills and knowledge to become digital citizens. This enables them to play an active role beyond school in an ever-changing digital landscape. It is a cohesive curriculum that teaches children a range of skills and knowledge around the three strands of computing set out in the National Curriculum:

- Computer Science
- Digital Literacy
- Information Technology

The skills the children will learn can be used throughout wider learning opportunities and they will be given the opportunity to do this across different subjects within school. The curriculum is progressive where clearly defined expectations for every year group are clear and builds on previous learning. Computer science allows children to understand computer programs and how they work. This begins with simple instructions being followed at the start of their learning journey; simple commands for a robot to follow; block programming and finally physical programming for a specific purpose by the end of Year 6. Each programming unit will incorporate the pedagogical approach of understand, copy, debug and create programs – this enables children to see a working program before undertaking their own. As information technology is paramount to being successful in today's society, children will create media and information with growing confidence with all year groups learning about spreadsheets; increasing the complexity as they move through phases. They will also use a range of programs to create media for different purposes understanding what makes it effective and why it might be used. Finally, digital literacy gives all children the platform to understand how to be safe using technology online and offline and how to communicate effectively with each other through email (KS2). Our online safety curriculum compliments this curriculum and runs alongside it to ensure children have a wider understanding.

The curriculum has been designed in such a way that supports our mixed year group provision. The curriculum runs as cycle A and cycle B so all children are given the opportunity to access all of the skills and knowledge required by the end of each phase of school. Where one skill or piece of knowledge requires prior knowledge within a phase, both areas of focus are in the same cycle to ensure children don't learn something before having the underpinning prior knowledge required to be successful. Our disciplinary skills will continue to be built upon each year even though they are in mixed year groups.

Curriculum Knowledge and Skills

Computing

Substantive Knowledge Concepts

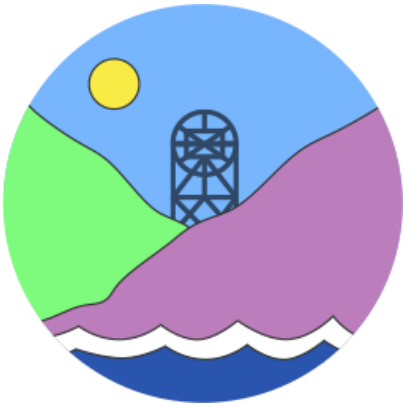
Computer Science	Information Technology	Digital Literacy
Computer science focuses on introducing fundamental concepts of how computers work and how to use them effectively and safely. It allows children to learn about different digital systems and learning to program including understanding what debugging is in relation to programming	Information technology (IT) focuses on children understanding how computers are used to create, organise, manipulate and retrieve digital content and to understand how they work. In KS1 children can recognise what IT is and how it is used and use it for a purpose. Whereas KS2 children will use and create information before analysing, presenting and evaluating data.	Knowledge of how to use computer systems safely across a range of devices. Knowing how to keep their information private and identify ways to report and where to go for help when using the internet or other digital technologies. This runs in tandem with the Online Safety curriculum that incorporates the focus from policies.

Disciplinary Skills
How we work and think like a computing expert.

Computing systems and networks	Programming	Data and information	Creating Media	Using technology safely
Using physical media to navigate, control and access a range of features and tools including the internet, laptops, tablets and shared files. Explain how computers communicate with each other in a network and this provides opportunities for communication and collaboration Identify devices that provide inputs, outputs or both	Use a range of programmable hardware and software to give instructions, debug problems and use programs for specific tasks. Use of sequencing, repetition, selection and variables within a programming language to achieve a specific goal Use logical reasoning to predict outcomes of programs	Gathering, analysing and evaluating data from a range of sources for a specific task. Make choices on what data is needed to accomplish a specific task	Use devices and software to create media for a range of purposes including digital painting, photography, software-based media and multi-media. Select the most appropriate software for a task and think critically about own and others' work	Locate and search for files and information using devices and search engines and be able to scrutinise websites to find appropriate content. Identify personal information, how to protect identities and the impact of sharing information online. Recognise acceptable and unacceptable behaviour online and be able to report concerns and describe ways to safe online

	Autumn	Spring	Summer
EYFS: *Foundations for Computing*	**Knowledge** • Know that information can be retrieved from computers • Use a device to support learning and explain what they are doing • Recognise that a range of technology is used in places such as homes and schools • Know that technology is used for a range of purposes **Skills** ➢ Operate mechanical toys ➢ Show an interest with technological toys or real objects ➢ Operate simple equipment e.g. a remote control ➢ Swipe or click on a digital device to achieve an outcome		
Years 1 & 2 ***Cycle A***	**Computer Science** *Technology around us (Y1)* *IT around us (Y2)* *Lego Builders* **Digital Literacy** *Online Safety and Computer Skills (Y1)* *Online safety and exploring Purple Mash (Y2)*	**Information Technology** *Creating Pictures* **Computer Science** *Programme a Robot Physical Programming*	**Information technology** *Creating media – photographs* *Grouping Data*
Years 1 & 2 ***Cycle B***	**Computer Science** *Technology around us (Y1)* *IT around us (Y2)* **Information Technology** *Animated Storybooks* **Digital Literacy** *Online Safety and Computer Skills (Y1)* *Online safety and exploring Purple Mash (Y2)*	**Information Technology** *Pictograms* *Spreadsheets*	**Computer Science** *Robot Algorithms Physical programming* *Scratch Junior Programming*
Years 3 & 4 ***Cycle A***	**Digital Literacy** *Online Safety* *Effective Searching* **Information Technology** *PowerPoint Presentations*	**Computer Science** *Computer Networks* *Scratch Programming*	**Computer Science** *Scratch Programming* **Information Technology** *Branching Databases*

Years 3 & 4 ***Cycle B***	**Digital Literacy** *Online Safety* *Email* **Information Technology** *Desktop Publishing*	**Information Technology** *Stop Motion* *Spreadsheets*	**Computer Science** *Logo Programming*
Years 5 & 6 ***Cycle A***	**Digital Literacy** *Online Safety* *Communicate and Collaborate* **Information Technology** *Quizzes*	**Computer Science** *Computer Networks* *Scratch Programming*	**Computer Science** *Crumble Physical Programming* **Information Technology** *Databases*
Years 5 & 6 ***Cycle B***	**Digital Literacy** *Online Safety* *Email* **Information Technology** *Blogging*	**Information Technology** *Video Production* *Spreadsheets*	**Computer Science** *Game Creator* *Micro:bits Physical Programming*



Year 1/2

Cycle A

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Technology Around Us Y1/I.T. Around Us Year 2</th><th>Term: Autumn 1</th><th>Year: 1/2 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Recognise common uses of information technology beyond school

Use technology safely and respectfully</td><td colspan="3">During these sessions, it may take children more than one lesson to develop the skill needed to be successful. As there are additional weeks in this term beyond the 5 sessions, this allows children to spend more time improving the key fundamentals needed for using a computer.
Year 1 – Technology Around Us
• Technology is something that helps us
• Examples of technology
• Recognise a screen, keyboard and mouse on a laptop and their functions

Year 2 – I.T. Around Us
• Information Technology is a computer or something that has been made to work with computers
• Responsible use of Information Technology improves our world in school and beyond.
• Information Technology is used all over in places such as shops, hospitals and libraries</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td colspan="2">Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Computer Networks and Systems
➢ Explain how technology helps us
➢ Compare what is and isn’t technology in the classroom and school and how to use it</td><td colspan="2">Computer Networks and Systems
➢ Investigate how Information Technology improves our world
➢ Explore how it is used in different workplaces
➢ Explain ways to use it responsibly</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">technology, computer, mouse, trackpad, keyboard, screen, double-click, typing
Information technology (IT), benefits.</td></tr>
</table>

Year 1 Computing Cycle A: Technology Around Us – Autumn Term 1				
What is technology and how can we use it?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is technology?	How can we use computer technology?	How can a mouse help us when using a computer?	What is a keyboard for?	How can a keyboard be used to edit text?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know what technology is and how it helps us	Know that a computer has a screen, keyboard and mouse	Know that a mouse is used to control things on the screen	Know that using a keyboard is called typing Know what the save icon is	Know that a keyboard can be used to add text. Know that it can also be used to delete text
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Networks and Systems Identify examples of technology in the classroom. Explain how technology helps us	**Computer Networks and Systems** Use a mouse to click and drag Switch on and log into a computer	**Computer Networks and Systems** Use a mouse to open a program **Creating Media** Use a mouse to create objects on a screen	**Creating Media** Be able to type their name **Computer Networks and Systems** Save work on the computer	**Creating Media** Be able to add and delete letters Use the arrow keys to move the cursor
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: Children will have experienced using technology to support their learning	**EYFS:** Children have used touch screens and on screen keyboards.	N/A	**EYFS:** Children will use an onscreen keyboard (iPad) to locate letters (upper case for initial and lower case for rest of name)	**EYFS:** Children will use an onscreen keyboard and have been shown how to delete if it is incorrect.

Year 2 Computing Cycle A: I.T Around Us – Autumn Term 1				
How can I.T. help us in school and beyond?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is I.T?	How do we use I.T. in school?	How is I.T. used around the world?	What are the benefits of I.T?	How can we use I.T. safely?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a computer and other digital devices are part of I.T. Know what isn't considered I.T.	Know that can I.T. can sometimes be used in more than one way.	Know that information technology is used in everyday places such as shops, libraries and hospitals.	Know how I.T. devices can work together	Know the different rules for using I.T.
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Networks and Systems Describe the uses of computers inside and outside of school	**Computer Networks and Systems** Explain what different types of I.T. are used for in school.	**Computer Networks and Systems** Explain how I.T. can be used in many workplaces	**Computer Networks and Systems** Describe why we use I.T. in the workplace	**Using Technology Safely** Explain how following rules when using I.T. can keep us safe
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y1 Cycle B: *Children will have an understanding of what technology is before identifying technology that uses I.T.*	***EYFS:*** *Use of digital devices such as smart board and tablets for children to complete a task* ***Y1 Cycle B:*** *Children have used a mouse and keyboard for different tasks*	***EYFS/Y1 Cycle B:*** *Children are aware how technology is used in school*	*N/A*	***EYFS/Y1 Cycle B:*** *Understanding of our personal information and when and when not to share it*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Lego Builders</th><th>Term: Autumn 2</th><th>Year: 1/2 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand what algorithms are; how they are implemented as programs on digital devices

Create and debug simple algorithms

Use technology purposefully to create, organise, store, manipulate and retrieve digital content</td><td colspan="3">As with the previous unit, the first couple of lessons are about practising using a tool on a computer so the children can access the learning. This may take more than one session and time must betaken to embed those key skills to allow all children to have the same opportunities.
• Purple mash is an online tool to access work digitally.
• Work online can be saved and opened again at a later point
• Online tools can be used for a range of purposes
• An algorithm is a set of instructions that are followed
• An algorithm for a computer to understand is called a program
• Debugging is the skill of fixes errors in algorithms and programs</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Using Technology Safely
➢ Create an avatar as an online representation of themselves
➢ Explain how we are safe using Purple Mash
Programming
➢ Follow simple algorithms
➢ Debug simple algorithms</td><td>Using Technology Safely
➢ Use a username and password
Computer Networks and Systems
➢ Explain how work can be shared with others online through a shared folder
Programming
➢ Create a simple algorithm
➢ Debug algorithms
➢ Explain why following algorithms create similar results</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Algorithm, code, computer, debugging, instructions, program</td></tr>
</table>

Year 1/2 Computing Cycle A: Lego Builders – Autumn 2				
Why are algorithms so important to follow correctly?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is Purple Mash?	How can Purple Mash be used?	Why are detailed instructions so important?	How does a computer use instructions?	How do results change if the order of instructions changes?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that Purple Mash is an online platform for our work (Y1) Know that Purple Mash can be used for a range of purposes (Y2)	Know that work can be saved and can be opened again later (Y1) Know that work can be shared with others after saving (Y2)	Know that if instructions are not followed correctly, it can lead to unsuccessful results Know that an algorithm is a set of instructions to be followed Know examples of algorithms we follow in everyday life.	Know that an algorithm written for a computer is called a program Know that programs work by following detailed instructions	Know that making corrections in an algorithm or program is called debugging
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Using Technology Safely Y1 - Create an avatar as an online persona Y2 - Use a username and password to log in safely	**Using Technology Safely** Y1 - Explain how Purple Mash keeps us safe **Computer Networks and Systems** Y2 - Explain how work can be shared with others online through a shared folder	**Programming** Y1 - Follow an algorithm carefully Y2 - Write an algorithm for a person to follow to build something and debug any problems	**Programming** Y1 - Follow an algorithm to create similar pieces of work Y2 - Explain the reasons that outcomes are the same when following an algorithm	**Programming** Y1 - Debug given algorithms and explain what could go wrong. Y1 - Create an algorithm for a robot to follow with support Y2 - Create an algorithm to create multiple items and identify errors in each other's work
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: *Using mini mash for activities* ***Y1 Cycle B:*** *Setting up purple mash with their online profile*	***Y1 Cycle B: (Year 2 only)*** *Saving work to their own folder*	***Y1 Cycle B:*** *Creating algorithms for a robot to follow*	***Y1 Cycle B:*** *Creating algorithms for a robot to follow*	***Y1 Cycle B:*** *Creating algorithms for a robot to follow*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Creating Pictures</th><th>Term: Spring 1</th><th>Year: 1/2 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to create, organise, store, manipulate and retrieve digital content</td><td colspan="3">• Know that paintings can be done by hand or on the computer
• Know that digital programs can imitate real life actions like watering down paint
• Know that a computer palette has a range of colours and shapes that can be used
• Know that tools in a program can help with creating different types of media including art
• Know that digital tools can be combined to make a new idea</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Creating Media
➢ Select the correct tool to create an effect
➢ Imitate different styles through the choice of digital tools
➢ Combine ideas together to make a new idea
➢ Explain which tools they used</td><td>Creating Media
➢ Use an array of tools to create different effects
➢ Explain which digital tools are best suited for a job with reasons why
➢ Combine multiple ideas together to enhance a pattern
Computer Networks and Systems
• Independently share their designs using the online display board
Using Technology Safely
• Save own work in a class folder</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Art, palette, style, fill, pattern, repeating, digitally, program, digital tools, collage, save, effects, media, advantages.</td></tr>
</table>

Year 1/2 Computing Cycle A: Creating Pictures – Spring 1				
What is a digital picture?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How can a computer be used to copy a style of art?	How can the same program be used to create different styles?	How can repeating patterns be used to create an effect?	How can two different effects be used to enhance patterns?	What is an eCollage?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that paintings can be done by hand or digitally Know that digital programs can imitate real life actions like watering down paint	Know that a computer palette has a range of colours and shapes that can be used	Know that tools in a program can help with creating different types of media including art Know that different styles can be created by using repetition	Know that digital tools can be combined to make a new idea	Know that tools in a program can help with creating different types of media including art
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y1 - Imitate a piece of art using tools in the palette Y2 - Create their own pictures using the same style as the one shown **Using Technology Safely** Y2 - Save own work to class folder	**Creating Media** Y1 - Use the most effective tool to create an effect Y2 - Explain the advantages of using a computer to create a picture over doing it by hand **Using Technology Safely** Y2 - Save own work to class folder	**Creating Media** Y1 - Use the most effective tool to create an effect Y2 - Use an array of tools to create different effects	**Creating Media** Y1 - Combine 2 ideas to create a new pattern Y2 - Combine multiple ideas to enhance a pattern further **Computer Networks and Systems** Y2 - Share work using a display board	**Creating Media** Y1 - Explain which tools they chose to create their work Y2 - Make choices with explanations as to which tools they used
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y1 Aut 1: *Control of a mouse to click, drag and select*	***Y1 Aut 1:*** *Control of a mouse to click, drag and select*	***Y1 Aut 1:*** *Control of a mouse to click, drag and select*	***Y1 Aut 1:*** *Control of a mouse to click, drag and select* ***Y2 Aut 2****: Share work to a display board*	

<table>
<tr><td colspan="2">Topics of Study: Computer Science – Programming a Robot</td><td>Term: Spring 2</td><td>Year: 1/2 Cycle A</td></tr>
<tr><td>National Curriculum</td><td colspan="3">Key Substantive Knowledge</td></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand what algorithms are; how they are implemented as programs on digital devices

Create and debug simple algorithms

Use logical reasoning to predict the behaviour of simple programs</td><td colspan="3">• Know that buttons can perform a task on a digital device
• Know that programs work by following exact instructions called algorithms
• Know that combining instructions is called a sequence
• Know that sometimes there is more than one solution to a problem</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Programming
➢ Use logical reasoning to predict the behaviour of a simple program
➢ Create and debug simple programs</td><td>Programming
➢ Create and debug simple programs
➢ Combine more than one algorithm to make a program
➢ Suggest improvements to algorithms and programs
➢ Identify more than one solution to a problem</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Forwards, backwards, turn, clear, go, commands, instructions, directions, plan, algorithm, program, route, transfer, sequence, debug,</td></tr>
</table>

Year 1/2 Computing Cycle A: Programming a Robot – Spring 2				
How can a digital device follow my instructions?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What are the buttons for?	Which way to go?	How do I get there and back?	Where am I going?	How do I get from A to B?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that buttons can perform a task on a digital device	Know that programs work by following exact instructions called algorithms Know that real world instructions can transfer to programming	Know that programs work by following exact instructions called algorithms	Know that combining instructions is called a sequence	Know that there is sometimes more than one answer to a problem
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y1 - Use logical reasoning to predict the behaviour of a simple program Y2 - Create a simple program	**Programming** Y1 - Use logical reasoning to predict the behaviour of a simple program Y2 - Create a simple program	**Programming** Y1 - Create a simple algorithm to make a robot move Y2 - Combine algorithms to make a robot move	**Programming** Y1 - Create and debug simple programs Y2 - Create and debug simple programs and suggest improvements	**Programming** Y1 - Create and debug simple programs Y2 - Identify more than one way to program a robot
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: *Follow a route another person has taken* ***Cycle B (Y2s):*** *Robot algorithms*	***EYFS:*** *Describe the route a robot is taking* ***Cycle B (Y2s):*** *Robot algorithms*	***EYFS:*** *Describe the route a robot is taking* ***Cycle B (Y2s):*** *Robot algorithms*	***Cycle B (Y2s):*** *Robot algorithms*	***Cycle B (Y2s):*** *Robot algorithms*

<table>
<tr><td colspan="2">Topics of Study: Information Technology – Creating Media</td><td>Term: Summer 1</td><td>Year: 1/2 Cycle A</td></tr>
<tr><td>National Curriculum</td><td colspan="3">Key Substantive Knowledge</td></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to create, organise, store, manipulate and retrieve digital content

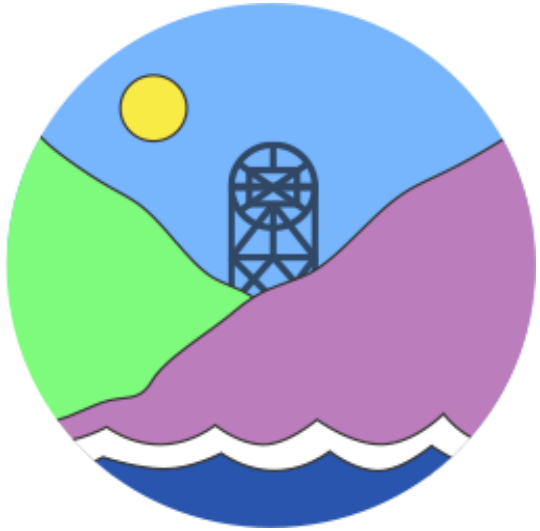
Recognise common uses of information technology beyond school</td><td colspan="3">• Know what devices can be used to take a photograph
• Know that a photograph can be taken as a portrait or as landscape depending on the need
• Know that a photograph is created by a photographer
• Know what a good photograph looks like
• Know that light can change a photograph
• Know that images can be changed and they aren’t always what they seem</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Creating Media
➢ Use technology to create, store and manipulate digital content
➢ Give explanations on how to create effective media</td><td>Creating Media
➢ Use technology to create, store and manipulate digital content
➢ Explain why we need to manipulate digital content
➢ Explain reasons why digital media may be unclear</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light source, flash, focus, background, editing, filter, format, lighting, photographer</td></tr>
</table>

Year 1/2 Computing Cycle A: Creating Media – Summer 1				
What's in a Digital Image?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How can I capture the moment?	Which way round?	What makes a good photograph?	What about light?	Why does it look like that?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know what devices can be used to take a photograph	Know that a photograph can be taken as a portrait or as landscape depending on the need	Know that a photograph is created by a photographer Know what a good photograph looks like	Know that light can change a photograph	Know that images can be changed and they aren't always what they seem
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Use technology to create digital content (Y1) Explain the steps taken to create digital content and where it is stored (Y2)	**Creating Media** Use technology to create and manipulate digital content (Y1) Explain why there is reason to manipulate technology for a purpose (Y2)	**Creating Media** Explain how to create effective media (Y1) Create photographs deciding which is best (Y2)	**Creating Media** Manipulate digital content (Y1) Explain the reasons why the media is unclear (Y2)	**Creating Media** Create, manipulate and store digital content (Y1) Use different tools to create a desired effect (Y2)
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: *Swiping and clicking on devices*	***EYFS:*** *Swiping and clicking on devices*	***EYFS:*** *Swiping and clicking on devices* ***EYFS:*** *Know that I.T. can be used for a range of purposes*	***EYFS:*** *Swiping and clicking on devices* ***EYFS:*** *Using a device to support learning and explain what they are doing*	***EYFS:*** *Swiping and clicking on devices* ***EYFS:*** *Using a device to support learning and explain what they are doing*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Grouping Data</th><th>Term: Summer 2</th><th>Year: 1/2 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to organsie and retrieve digital content</td><td colspan="3">Know that the word data is used to describe facts collected together to be analysed
Know that we sort items into groups to identify them easily
Know that sorting objects into groups helps us identify how many of something we have.
Know that the properties of an object can help with grouping
Know that grouping data helps us answer questions about it</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Data and Information
Gather and analyse data
Evaluate data for a specific task
Analyse data based on questions asked</td><td>Data and Information
Make decisions on how to group data together
Explain how organising data helps us
Gather data and make decisions on different ways to analyse it
Analyse and evaluate data in different ways and comment on how
Create questions based on how they analyse data</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Object, label, group, search, image, property, colour, shape, size, identify, analyse, evaluate, data set, more, less, most, fewest</td></tr>
</table>

Year 1/2 Computing Cycle A: Grouping Data – Summer 2				
How can I sort my data?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What goes into each group?	**How many?**	**What does it look like?**	**How have these been grouped?**	**What's the answer?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that we sort items into groups to identify them easily Know that the word data is used to describe facts collected together to be analysed	Know that sorting objects into groups helps us identify how many of something we have.	Know that the properties of an object can help with grouping	Know that the properties of an object can help with grouping	Know that grouping data helps us answer questions about it
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Data and Information Y1 – Gather and analyse data Y2 – Make decisions on how to group data together	**Data and Information** Y1 – Gather and analyse data Y2 – Explain how organising data helps us	**Data and Information** Y1 – Evaluate data for a specific task Y2 – Gather data and make decisions on different ways to analyse it	**Data and Information** Y1 – Analyse and evaluate data Y2 – Analyse and evaluate data in different ways and comment on how	**Data and Information** Y1 – Analyse data based on questions asked Y2 – Create questions based on how they analyse data
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: *Knowing that information can be retrieved from a computer* ***Y2 –*** *Pictograms in maths and Cycle B*	***EYFS –*** *Comparing and grouping* ***Y1 –*** *counting and grouping in maths*	***EYFS –*** *Comparing and grouping* ***Y2 –*** *Pictograms in maths and Cycle B*	***EYFS –*** *Comparing and grouping*	***EYFS –*** *Using devices to support with their learning and explaining how*



Year 1/2

Cycle B

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Technology Around Us Y1/I.T. Around Us Year 2</th><th>Term: Autumn 1</th><th>Year: 1/2 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Recognise common uses of information technology beyond school

Use technology safely and respectfully</td><td colspan="3">During these sessions, it may take children more than one lesson to develop the skill needed to be successful. As there are additional weeks in this term beyond the 5 sessions, this allows children to spend more time improving the key fundamentals needed for using a computer.
Year 1 – Technology Around Us
• Technology is something that helps us
• Examples of technology
• Recognise a screen, keyboard and mouse on a laptop and their functions

Year 2 – I.T. Around Us
• Information Technology is a computer or something that has been made to work with computers
• Responsible use of Information Technology improves our world in school and beyond.
• Information Technology is used all over in places such as shops, hospitals and libraries</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td colspan="2">Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">➢ Explain how technology helps us
➢ Compare what is and isn't technology in the classroom and school and how to use it</td><td colspan="2">➢ Investigate how Information Technology improves our world
➢ Explore how it is used in different workplaces
➢ Explain ways to use it responsibly</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">technology, computer, mouse, trackpad, keyboard, screen, double-click, typing
Information technology (IT), benefits.</td></tr>
</table>

Year 1 Computing Cycle B: Technology Around Us – Autumn Term 1				
What is technology and how can we use it?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is technology?	How can we use computer technology?	How can a mouse help us when using a computer?	What is a keyboard for?	How can a keyboard be used to edit text?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know what technology is and how it helps us	Know that a computer has a screen, keyboard and mouse	Know that a mouse is used to control things on the screen	Know that using a keyboard is called typing Know what the save icon is	Know that a keyboard can be used to add text. Know that it can also be used to delete text
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Networks and Systems Identify examples of technology in the classroom. Explain how technology helps us	**Computer Networks and Systems** Use a mouse to click and drag Switch on and log into a computer	**Computer Networks and Systems** Use a mouse to open a program **Creating Media** Use a mouse to create objects on a screen	**Creating Media** Be able to type their name **Computer Networks and Systems** Save work on the computer	**Creating Media** Be able to add and delete letters Use the arrow keys to move the cursor
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: Children will have experienced using technology to support their learning	**EYFS:** Children have used touch screens and on screen keyboards.	**EYFS:** Children have used touch screens to move things around the screen	**EYFS:** Children will use an onscreen keyboard (iPad) to locate letters (upper case for initial and lower case for rest of name)	**EYFS:** Children will use an onscreen keyboard and have been shown how to delete if it is incorrect.

Year 2 Computing Cycle B: I.T Around Us – Autumn Term 1				
How can I.T. help us in school and beyond?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is I.T?	How do we use I.T. in school?	How is I.T. used around the world?	What are the benefits of I.T?	How can we use I.T. safely?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a computer and other digital devices are part of I.T. Know what isn't considered I.T.	Know that can I.T. can sometimes be used in more than one way.	Know that information technology is used in everyday places such as shops, libraries and hospitals.	Know how I.T. devices can work together	Know the different rules for using I.T.
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Networks and Systems Describe the uses of computers inside and outside of school	**Computer Networks and Systems** Explain what different types of I.T. are used for in school.	**Computer Networks and Systems** Explain how I.T. can be used in many workplaces	**Computer Networks and Systems** Describe why we use I.T. in the workplace	**Using Technology Safely** Explain how following rules when using I.T. can keep us safe
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y1 Cycle B: *Children will have an understanding of what technology is before identifying technology that uses I.T.*	***EYFS:*** *Use of digital devices such as smart board and tablets for children to complete a task* ***Y1 Cycle B:*** *Children have used a mouse and keyboard for different tasks*	***EYFS/Y1 Cycle B:*** *Children are aware how technology is used in school*	***EYFS/Y1 Cycle B:*** *Children are aware how technology is used in school*	***EYFS/Y1 Cycle B:*** *Understanding of our personal information and when and when not to share it*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Animated Storybooks</th><th>Term: Autumn 2</th><th>Year: 1/2 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to create and manipulate digital content

Use technology safely and respectfully</td><td colspan="3">• Know the difference between traditional book and an e-book
• Know that animation is making still images move
• Know that copy and pasting can save time when adding additional information</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Creating Media
➢ Use different drawing tools to add a simple picture
➢ Manipulate an image to make it animated
➢ Add sounds and backgrounds to add detail
➢ Use copy and paste to duplicate media
Using Technology Safely
➢ Share media with others appropriately with adult support</td><td>Creating Media
➢ Use different drawing tools to add pictures and add text to a story
➢ Manipulate multiple images with different animations
➢ Add sound effects and voice records to create audio books
Use copy and paste to add multiple pages
Using Technology Safely
➢ Share media with others appropriately independently</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Animation, e-book, sound, background, edit, sound effect, clipart, font, text</td></tr>
</table>

Year 2 Computing Cycle B: Animated Storybooks – Autumn Term 2				
How is an e-book different to a traditional book?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What's the difference?	**How can I bring it to life?**	**What's that noise?**	**What's the setting?**	**How do I make my story longer?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know the difference between a traditional books and e-books	Know that animation makes still images move	Know that unlike traditional books, e-books can be heard	Know that a background image creates a setting for a story	Know that copy and pasting saves time when adding additional media
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y1 – Use different drawing tools to create a picture and add a simple text box Y2 – Use different drawing tools to create a picture and add text to their page	**Creating Media** Y1 – Manipulate an image to make it animated Y2 – Manipulate multiple images with different animations	**Creating Media** Y1 – Add sound that matches the image they have created. Y2 – Add sound effects and voice recordings to create an audio book	**Creating Media** Y1 – Choose from a range of background images to add a setting to their story Y2 – Use additional drawing tools to create imagery and change font and size	**Creating Media** Y1 – Use the copy and paste function to add more to their story Y2 – Use the copy and paste function to add multiple pages **Using Technology Safely** Y1 – Share their story appropriately with adult support Y2 – Share their story appropriately independently
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
EYFS: *know that technology is used for a range of purposes* ***Aut Cycle A/B:*** *Exploring Purple Mash and computer skills*	***Cycle A****: What makes a good photograph (Y2 only)*	***EYFS:*** *Operating simple equipment, swipe and click on a digital device to achieve an outcome*	***Aut Cycle A/B:*** *Exploring Purple Mash and computer skills*	***EYFS:*** *Operating simple equipment, swipe and click on a digital device to achieve an outcome*

<table>
<tr><td colspan="2">Topics of Study: Information Technology – Pictograms</td><td>Term: Spring 1</td><td>Year: 1/2 Cycle B</td></tr>
<tr><td>National Curriculum</td><td colspan="3">Key Substantive Knowledge</td></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to create, organise, store, manipulate and retrieve digital content</td><td colspan="3">• Know that data can be presented in picture format
• Know that a pictogram is a visual way of gathering and displaying data
• Know that collecting data gives us facts and information about something
• Know that data can be used to help answer questions</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Data and Information
➢ Collect and discuss data
➢ Record data and answer questions
➢ Gather and record own data</td><td>Data and Information
➢ Collect, create and discuss what data shows
➢ Analyse and ask questions about the data
➢ Make decisions on data needed and then record it</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing</td></tr>
</table>

Year 2 Computing Cycle B: Pictograms – Spring 1				
What's in a picture?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What do the pictures tell us?	**What is the pictogram about?**	**Why do we collect data?**	**What do I want to find out?**	**What do I know from the data?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that data can be represented in picture format	Know that a pictogram is a visual way of gathering and displaying data	Know that collecting data gives us facts and information about something	Know that collecting data gives us facts and information about something	Know that data can help answer questions.
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Data and Information Y1 – Collect and discuss data Y2- Collect, create and discuss what the data shows	**Data and Information** Y1 – Discuss what the data collected shows Y2 – Analyse and ask questions about the data presented	**Data and Information** Y1 – Gather and record data and answer questions relating to it Y2 – Gather and record data and look for patterns	**Data and Information** Y1 – Gather and record own data using a pictogram Y2 – Make own decisions on what data they need to answer their own question and record it in a pictogram	**Data and Information** Y1 – Answer questions relating to another person's data Y2 – Create questions based on the information given.
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y2 only: *Grouping data*	***Y2 only:*** *Grouping data*	***Y2 only:*** *Grouping data*	***Y2 only:*** *Grouping data*	***Y2 only:*** *Grouping data*

<table>
<tr><td colspan="2">Topics of Study: Information Technology – Spreadsheets</td><td>Term: Spring 2</td><td>Year: 1/2 Cycle B</td></tr>
<tr><td>National Curriculum</td><td colspan="3">Key Substantive Knowledge</td></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology purposefully to create, organise and store digital content</td><td colspan="3">• Know that a spreadsheet is used to organise information
• Know that a cell can contain different types of data
• Know that spreadsheets can total columns and rows together and the sigma symbol is used to do this
• Know that spreadsheets can be used as a tool for counting
• Know spreadsheets can use data to create other data types such as block diagrams</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Creating Media
➢ Use spreadsheets to answer simple calculations
➢ Use spreadsheets to create and organise data

Data and Information
➢ Analyse data to provide answers</td><td>Creating Media
➢ Explore different calculations and use a spreadsheet to find the answer
➢ Use spreadsheets to create and organise a range of data

Data and Information
➢ Use data provided to solve problems
➢ Use data to analyse the information it shows</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Calculations, cell, column, data, drag, equals, spreadsheet, graph, row, equals tools, total</td></tr>
</table>

Year 2 Computing Cycle B: Spreadsheets – Spring 2				
Why do we need Spreadsheets?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is a Spreadsheet?	**What's in a cell?**	**Does it all add up?**	**How many?**	**How can I make data easier to follow?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a spreadsheet is used for organising information	Know that cells can contain different types of data	Know that spreadsheets can make totals from rows and columns and the sigma symbol is used to do this	Know that a spreadsheet can be used as a tool for counting	Know that a spreadsheet can use data to create other data types such as block graphs
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y1 – Children use spreadsheet to answer simple calculations (bonds to 20) Y2 – Children explore different calculations and use the spreadsheet to find the answers (this can be beyond their ability to calculate mentally)	**Creating Media** Y1 – Children use spreadsheet to answer simple calculations Y2 – Children explore different calculations and use the spreadsheet to find the answers	**Data and Information** Y1 – Analyse data provided to find answers Y2 – Use the data provided to solve problems	**Creating Media** Y1 – Use spreadsheets to create and organise data Y2 – Use spreadsheets to create and organise a range of data	**Creating Media** Y1 – Create automatic charts from the data collected **Data and Information** Y2 – Use the data to analyse the information it shows.
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
N/A	*N/A*	*N/A*	*N/A*	***Spr 1:*** *Collecting and sorting data using pictograms*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Robot Algorithms</th><th>Term: Summer 1</th><th>Year: 1/2 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand what algorithms are; how they are implemented as programs on digital devices; programs execute by following precise and unambiguous instructions

Create and debug simple programs

Use logical reasoning to predict the behaviour of simple programs</td><td colspan="3">• Know that a series of instructions is called a sequence
• Know that changing the order of a sequence can affect the outcome
• Know a prediction uses reasoned decisions and isn't a guess
• Know the same goal can be achieved using different algorithms
• Know that debugging is finding and fixing errors in a program</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Programming
➢ Use sequencing to make a set of instructions
➢ Create different algorithms using the same instructions
➢ Predict and check the outcome of a sequence
➢ Create an algorithm to achieve a goal
➢ Follow algorithms and debug when errors occur</td><td>Programming
➢ Create sequences that have clear and unambiguous instructions
➢ Show different outcomes when using different sequences of the same instructions
➢ Predict and check the outcome of a sequence and compare the outcomes
➢ Create different algorithms that still achieve the same goal despite being different
➢ Design an algorithm before checking it and debugging</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition</td></tr>
</table>

Year 2 Computing Cycle B: Robot Algorithms – Summer 1				
What should the sequence of instructions be?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is a sequence?	**What's the same? What's different?**	**What will happen?**	**Which way should I go?**	**How do I fix it?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a series of instructions is called a sequence	Know that changing the order of a sequence can affect the outcome	Know that a prediction uses reasoned decisions and isn't just a guess	Know that the same goal can be achieved with different algorithms	Know that debugging is the finding and fixing of errors in a program Know that larger programming tasks can be broken into 'chunks' to make them easier to follow
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y1 – Use sequencing to make a set of instructions Y2 – Create sequences that have clear unambiguous instructions	**Programming** Y1 – Create different algorithms using the same instructions Y2 – Show different outcomes when using different sequences of the same instructions	**Programming** Y1- Predict the outcome of a sequence then check if it was correct Y2 – Predict and check the outcome of a sequence and compare the outcomes	**Programming** Y1 – Create an algorithm to complete a goal Y2 – Create different algorithms that still achieve the same goal despite being different	**Programming** Y1 – Follow algorithms and debug errors when they occur Y2 – Design an algorithm before checking it and debugging
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y2 only – *Know what an algorithm is*	***Y2 only*** *– Using logical reasoning to predict the outcome*	***Y2 only*** *– Using logical reasoning to predict the outcome*	***Y2 only:*** *Create a simple algorithm to make a robot move*	***Y2 only:*** *Debugged a simple program*

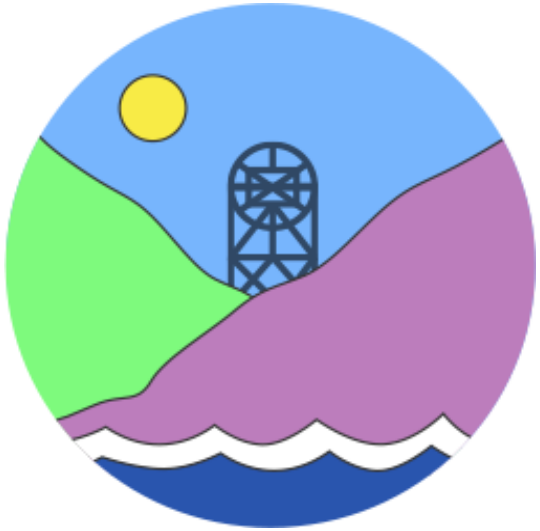
<table>
<tr><td colspan="2">Topics of Study: Computer Science – Scratch Junior</td><td>Term: Summer 2</td><td>Year: 1/2 Cycle B</td></tr>
<tr><td>National Curriculum</td><td colspan="3">Key Substantive Knowledge</td></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

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</td><td colspan="3">• Know that programming can be done on different platforms
• Know that placing blocks together create a sequence in a program
• Know that changing values can affect the function of a block
• Know that different sprites can have different algorithms that affect how they move
• Know that an algorithm needs to be changed to a program to work on a device</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 1</td><td>Disciplinary Skills Year 2</td></tr>
<tr><td colspan="2">Programming
➢ Use different programming commands to move an on-screen sprite
➢ Create a block programming sequence
➢ Changing values to shorten sequences
➢ Create different algorithms
➢ Design a program using algorithms and debug any errors</td><td>Programming
➢ Create a sequence and comment on others' sequences
➢ Use a range of different blocks to create different sequences
➢ Explore different values and how they can make the program more efficient
➢ Design multiple programs using their algorithms and comment on the effect</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Scratch Jr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.</td></tr>
</table>

Year 2 Computing Cycle B: Scratch Junior – Summer 2				
How can I program an on-screen animation?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How can programming be different?	**Which block?**	**How many times?**	**Who does what?**	**How do I program my algorithm?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that programming can be done on different platforms	Know that placing blocks together create a sequence in a program	Know that changing values can affect the function of a block	Know that different sprites can have different algorithms that affect how they move	Know that an algorithm needs to be changed to a program to work on a device
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y1 – Use different programming commands to move an on-screen sprite Y2 – Create a sequence and comment on others' sequences	**Programming** Y1 – Create a block programming sequence Y2 – Use a range of different blocks to create different sequences	**Programming** Y1 – Changing values to shorten sequences Y2 – Explore different values and how they can make the program more efficient	**Programming** Y1 – Create different algorithms Y2 – Explore how different algorithms may affect their program and make predictions	**Programming** Y1 – Design a program using algorithms Debug any errors Y2 – Design multiple programs using their algorithms and comment on the effect
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Cycle A&B: *Programming a robot using algorithms*	*Sequencing from creating robot algorithms*	*Debugging programs*	*Robot algorithms and making a robot move*	*Using directions to program a robot*



Year 3/4

Cycle A

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Digital Literacy: Online Safety and Effective Searching</th><th>Term: Autumn 1</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand computer networks including the Internet; how they can provide multiple services such as the worldwide web

Use search technologies effectively and appreciate how results are selected</td><td colspan="3">Know that passwords need to have different types of characters to be truly safe.
Know that we use the Internet for communication
Know that not all information on the internet is true and some websites are spoofs
Know where to turn for help if they see inappropriate content and know the meaning of age restrictions
Know that the internet is a network of computers connected around the world and is different to the worldwide web which is the websites that we visit
Know that search engines are used to help find pages on the internet</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Using Technology Safely
Explain and describe ways to protect yourself online
Scrutinise a website for appropriate content
Identify ways in which inappropriate behaviour can affect others
Search and locate information using a search engine
Computer Systems and Networks
Use the internet to access websites
Access the internet and search engines
Creating Media
Use software-based media to explain how to do something</td><td>Using Technology Safely
Write an explanation of how to use the internet safely
Use a range of websites to scrutinise the content shown
Use explanations to describe ways to stay safe online
Access and navigate pages on the internet
Computer Systems and Networks
Navigate to and use websites for information
Creating Media
Use software-based media to explain how to do something and what not to do</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Appropriate, password, spoof, personal information, reputable source, reliable source, inappropriate, Internet, permission, verify, digital footprint, network, web page, search engine, world wide web, Internet, web address, website</td></tr>
</table>

Year 3/4 Computing Cycle A: Online Safety and Effective Searching – Autumn 1					
Where do I find it and how do I know it's safe?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How do I keep people out?	Fact or Fiction?	Is it safe for me?	What is the internet though?	How do I find it?	What do people need to know?
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that passwords need to have different types of characters to be truly safe. Know that we use the Internet for communication	Know that not all information on the internet is true and that some websites are spoofs	Know where to turn for help if they see inappropriate content and know the meaning of age restrictions	Know that the internet is a network of computers connected around the world and is different to the worldwide web which is the websites that we visit	Know that search engines are used to help find pages on the internet	Know that search engines are used to help find pages on the internet
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Using Technology Safely Y3 – Explain how to stay safe online Y4 – Write an explanation of how to use the internet safely	**Computing Systems and Networks** Y3 – Use the internet to access websites Y4 – Navigate to and use websites for information **Use Technology Safely** Y3 – Scrutinise a website for appropriate content Y4 – Use a range of websites to scrutinise the content shown	**Using Technology Safely** Y3 – Identify ways in which inappropriate behaviour can affect others Y4 – Use explanations to describe ways to stay safe online	**Computing Systems and Networks** Y3 – Access the internet and search engines Y4 – Navigate to and use websites for information	**Using Technology Safely** Y3 – Search and locate information using a search engine Y4 – Use a search engine to locate information and scrutinise websites to find appropriate content	**Creating Media** Y3 – Use software based media to explain how to do something Y4 – Use software based media to explain how to do something and what not to do
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Half termly online safety lessons ***Y2:*** *Using I.T. safely*	*Half termly online safety lessons* ***Y2:*** *Using I.T. safely*	*Half termly online safety lessons* ***Y2:*** *Using I.T. safely*	**KS1:** Sharing work on purple mash	*Half termly online safety lessons*	*Half termly online safety lessons*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: PowerPoint Presentations</th><th>Term: Autumn 2</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Create content that accomplish given goals including presenting information</td><td colspan="3">Know that a presentation is used to display information to an audience.
Know that presentations can use images, text, video and animation
Know that animations can move text and images on a screen and that different animations create different effects
Know that timings are used in presentations to make them an appropriate length
Know that not all information should be included in a presentation</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Creating Media
Use software to create media
Use digital images to improve their media
Select different tools and use them in creating media
Select an appropriate tool for a task
Use software to create an engaging presentation</td><td>Creating Media
Use software to create media and think critically about the effectiveness of their work
Use digital images and video to improve their media
Choose the most appropriate tool for a task
Use and discuss the appropriateness of each tool in creating effective media
Use software to create an engaging presentation and think critically about the effectiveness of other's presentations</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Animation, border, formatting, font, layer, media, presentation, slide, slideshow, text box, transition, WordArt</td></tr>
</table>

Year 3/4 Computing Cycle A: PowerPoint Presentations – Autumn 2				
What does the audience need to know?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is a presentation used for?	**What does it include?**	**How can I make it more interesting?**	**How long should it last?**	**What do I want to tell them?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a presentation is used to display information to an audience.	Know that presentations can use images, text, video and animation	Know that animations can move text and images on a screen and that different animations create different effects	Know that timings are used in presentations to make them an appropriate length	Know that not all information should be included in a presentation
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y3 – Use software to create media Y4 – Use software to create media and think critically about the effectiveness of their work	**Creating Media** Y3 – Use digital images to improve their media Y4 – Use digital images and video to improve their media	**Creating Media** Y3 – Select different tools and use them in creating media Y4 – Choose the most appropriate tool for a task	**Creating Media** Y3 – Select an appropriate tool for a task Y4 – Use and discuss the appropriateness of each tool in creating effective media	**Creating Media** Y3 – Use software to create an engaging presentation Y4 – Use software to create an engaging presentation and think critically about the effectiveness of others' presentations
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
KS1: *Presenting ideas in art form*	***KS1:*** *Using illustrations and text in animated storybooks*	***KS1:*** *Using illustrations and text in animated storybooks*		***KS1:*** *Using illustrations and text in animated storybooks* ***KS1:*** *Presenting ideas in art form*

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Computer Networks</th><th>Term: Spring 1</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand computer networks including the Internet; how they can provide multiple services, such as the worldwide web, and the opportunities they offer for communication and collaboration</td><td colspan="3">• Know that digital devices use inputs, process and output to work
• Know that devices can be input or output devices and sometimes both
• Know that digital and non-digital devices have different capabilities
• Know that a computer network is made up of a number of devices</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Computer Systems and Networks
➢ Explain the output to different processes
➢ Recognise different devices that have an input or output
➢ Use physical media to control different tools
➢ Explain how computers are connected together
➢ Explain how computers work together in a network</td><td>Computer Systems and Networks
➢ Identify the inputs, outputs and process
➢ Identify devices that provide inputs and outputs and give explanations about how
➢ Control and access different digital tools and compare against non-digital tools
➢ Explain and demonstrate how computers are connected together
➢ Identify devices in a network and explain how they are able to interact</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets</td></tr>
</table>

Year 3/4 Computing Cycle A: Computer Networks – Spring 1				
How do we stay connected?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How does a digital device work?	**What parts make up a digital device?**	**How do digital devices help us?**	**How are computers connected?**	**What does our school network looked like?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that digital devices use inputs, process and output to work	Know that devices can be input or output devices and sometimes both	Know that digital and non-digital devices have different capabilities	Know that a computer network is made up of a number of devices	Know that a computer network is made up of a number of devices
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Systems and Networks (Unplugged) Y3 – Explain the output to different processes Y4 – Identify the inputs, outputs and process	**Computer Systems and Networks (Unplugged)** Y3 – Recognise different devices that have an input or output Y4 – Identify devices that provide inputs and outputs and give explanations about how	**Computer Systems and Networks** Y3 – Use physical media to control different tools Y4 – Control and access different digital tools and compare against non-digital tools	**Computer Systems and Networks (Unplugged)** Y3 – Explain how computers are connected together Y4 – Explain and demonstrate how computers are connected together	**Computer Systems and Networks** Y3 – Explain how computers work together in a network Y4 – Identify devices in a network and explain how they are able to interact
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
KS1: *Taking photographs* ***KS1:*** *Sharing work digitally*	***KS1:*** *Knowing that I.T. is a computer or something that works with a computer*	***KS1:*** *Children have learnt how to explain how technology helps us*	***KS1:*** *Children have learnt the relationship between parts of a computer and how they interact*	***KS1:*** *Shared work through Purple Mash*

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Programming</th><th>Term: Spring 2</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs that accomplish specific goals

Use sequencing in programs

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</td><td colspan="3">• Know that programming can use different language depending on the software used
• Know that block programming is a type of programming
• Know that a programmable character can be called a sprite
• Know that blocks can be joined together to make a sequence
• Know that the order of a sequence dictates how my on-screen program will work
• Know that different types of blocks can be combined to create a program
• Know that code can be copied to save time</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Programming
➢ Compare programming inputs
➢ Use logical reasoning to explain how a simple algorithm works
➢ Use sequencing with different inputs
➢ Use logical reasoning to explain how an algorithm works
➢ Design and create a sequence from given code
➢ Design, create and debug a program that accomplishes a specific goal with support</td><td>Programming
➢ Use logical reasoning to explain errors before correcting them
➢ Debug programs that accomplish specific goals
➢ Explore different inputs that lead to different sequences
➢ Use logical reasoning to explain how an algorithm works and write their own program
➢ Design and create their own sequence independently
➢ Design, create and debug a program that accomplishes a specific goal independently</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.</td></tr>
</table>

Year 3/4 Computing Cycle A: Sequencing in Programming 1 – Spring 2					
How does sequencing help when creating digital music?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is Scratch? *	**How does it move? ***	**What is in my sequence?**	**Which order?**	**Which blocks work together?**	**What will the performance look like?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	
Know that programming can use different language depending on the software used Know that block programming is a type of programming	Know that a programmable character can be called a sprite	Know that blocks can be joined together to make a sequence	Know that the order of a sequence dictates how my on-screen program will work	Know that different types of blocks can be combined to create a program	Know that code can be copied to save time
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	
Programming Y3 – Compare programming inputs Y4 – Use logical reasoning to explain errors before correcting them	**Programming** Y3 – Use logical reasoning to explain how a simple algorithm works Y4 – Debug programs that accomplish specific goals	**Programming** Y3 – Use sequencing with different inputs Y4 – Explore different inputs that lead to different sequences	**Programming** Y3 – Use logical reasoning to explain how an algorithm works Y4 – Use logical reasoning to explain how an algorithm works and write their own program	**Programming** Y3 – Design and create a sequence from given code Y4 – Design and create their own sequence independently	**Programming** Y3 – Design, create and debug a program that accomplishes a specific goal with support Y4 – Design, create and debug a program that accomplishes a specific goal independently
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	
Y1/2 Programming a robot and robot algorithms	*Y1/2 Cycle B– Scratch Junior*	*Y1/2 Programming a robot and robot algorithms*	*Y1/2 Cycle B: Robot Algorithms*	*Y1/2 Cycle B – Scratch Junior*	*Y1/2 Programming a robot and robot algorithms*

* *There will need to be an introduction each year due to the 2-year cycle to allow all age groups to be introduced to this programming software every year.*

Children who have already been introduced in the previous year will be given independent tasks to do using the programme.

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Programming</th><th>Term: Summer 1</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts

Use sequencing in programs

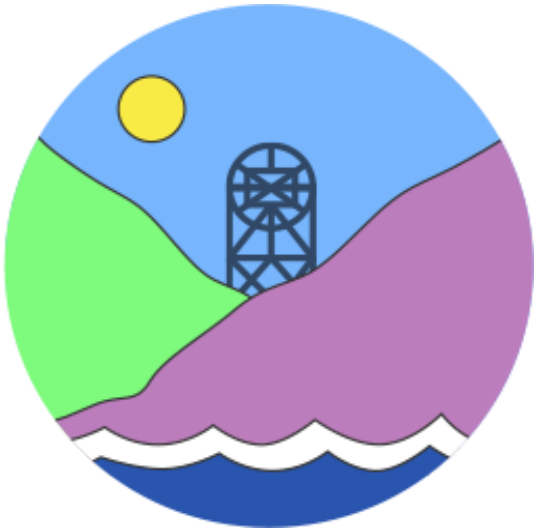
Use logical reasoning to explain how some simple algorithms work</td><td colspan="3">• Know that an event will lead to a programmed action
• Know that objects used in a program need to be sized correctly to work
• Know that debugging program in small steps makes it easier to identify errors
• Know that there are different ways to accomplish the same task</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Programming
➢ Use logical reasoning to explain how simple algorithms work
➢ Use an algorithm to write a program
➢ Design, write and debug programs that accomplish specific goals with support</td><td>Programming
➢ Use logical reasoning to explain how simple algorithms work and detect and errors in programs
➢ Solve problems by decomposing them into smaller steps
➢ Design, write and debug a program that accomplishes a goal independently</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.</td></tr>
</table>

Year 3/4 Computing Cycle A: Sequencing in Programming 2 – Summer 1				
How does sequencing help me solve a problem?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How will it move?	**How does it work?**	**Which blocks should I choose?**	**What is wrong with it?**	**What will it look like?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that an event will lead to a programmed action	Know that objects used in a program need to be sized correctly to work	Know that an event will lead to a programmed action	Know that debugging program in small steps makes it easier to identify errors	Know that there are different ways to accomplish the same task
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y3 – Use logical reasoning to explain how simple algorithms work Y4 – Use logical reasoning to explain how simple algorithms work and detect and errors in programs	**Programming** Y3 – Use an algorithm to write a program Y4 – Design and write a program that accomplishes a goal independently	**Programming** Y3 – Design a program for a specific goal with support Y4 – Design a program for a specific goal independently	**Programming** Y3 – Debug programs that accomplish specific goals Y4 – Solve problems by decomposing them into smaller steps	**Programming** Y3 – Design, write and debug programs that accomplish specific goals with support Y4 - Design, write and debug a program that accomplishes a goal independently
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y1/2 Cycle B Scratch Junior *Y3/4 Cycle A Scratch programming 1*	*Y1/2 – Robot algorithms and programming a robot*	*Y1/2 Cycle B Scratch Junior*	*Y1/2 Cycle B Robot algorithms*	*Y3/4 Cycle A Scratch Programming*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: Branching Databases</th><th>Term: Summer 2</th><th>Year: 3/4 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Select, use and combine a variety of software to create systems and content that accomplish given goals, including collecting, analysing and presenting data and information</td><td colspan="3">• Know that a closed question can only be answered using yes or no
• Know that an attribute is a property of an object that helps identify it.
• Know that data can be sorted in different ways by looking at different attributes
• Know that a branching database uses questions to identify objects
• Know that questions need to be organised carefully to split objects into similarly sized groups</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Data and Information
➢ Analyse, organise and evaluate data for a specific task
➢ Make a choice on what data is needed to accomplish a specific task
➢ Analyse and organise data through effective questioning</td><td>Data and Information
➢ Analyse data for a specific task and raise further questions about the data and find different ways to analyse the same data
➢ Identify a range of data needed to accomplish a task in different ways
➢ Find more than one way of analysing data and check for effectiveness
➢ Analyse and organise data in different ways using effective questioning commenting on which is most effective</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.</td></tr>
</table>

Year 3/4 Computing Cycle A: Branching Databases – Summer 2				
What is a branching database?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
Yes or No?	**How has the data been sorted?**	**How do questions help me organise data?**	**How do I organise data?**	**Which object do I want to identify?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a closed question can only be answered using yes or no	Know that an attribute is a property of an object that helps identify it. Know that data can be sorted in different ways by looking at different attributes	Know that a branching database uses questions to identify objects	Know that questions need to be organised carefully to split objects into similarly sized groups	Know that questions need to be organised carefully to split objects into similarly sized groups
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Data and Information Y3 – Analyse data for a specific task Y4 – Analyse data for a specific task and raise further questions about the data	**Data and Information** Y3 – Make a choice on what data is needed to accomplish a specific task Y4 – Identify a range of data needed to accomplish a task in different ways	**Data and Information** Y3 – Analyse data for a specific task Y4 – Analyse data for a specific task and find ways to analyse the same data differently	**Data and Information** Y3 – Analyse and evaluate data and check for effectiveness Y4 – Find more than one way of analysing data and check for effectiveness	**Data and Information** Y3 – Analyse and organise data through effective questioning Y4 – Analyse and organise data in different ways using effective questioning commenting on which is most effective
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
KS1 – Learnt about how to sort data using properties of objects	*KS1 Children have learnt about sorting the same data into different groups*	*KS1 Children have learnt about sorting the same data into different groups*	*KS1 Children have learnt how to organise data into groups and count the amount of objects in each group*	*KS1 Children have sorted data by answering questions and created questions of their own*



Year 3/4

Cycle B

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Digital Literacy: Online Safety and Email</th><th>Term: Autumn 1</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Select, use and combine a variety of software (including Internet services) to design and create content that accomplish specific goals, including 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</td><td colspan="3">• Know that there are different ways that we communicate including a range of ways online
• Know that emails are used to send instant messages to others across the Internet
• Know that email is an easy way to share information with others but does have its risks
• Know that an attachment is something that can be sent with an email and can include files and images
• Know that I must make decisions on what information I should reply with depending on the sender of the email</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Using Technology Safely
➢ Explain the benefits of communicating online
➢ Describe ways to stay safe online
➢ Use acceptable behaviour and use technology responsibly

Creating Media
➢ Combine software using the Internet to create content

Computer Systems and Networks
➢ Navigate and access Internet tools</td><td>Using Technology Safely
➢ Explain the benefits and dangers of communicating online
➢ Describe ways to stay safe online and what to do if you have a problem
➢ Use acceptable behaviour and use technology responsibly and identify how to report concerns.

Creating Media
• Combine software using the Internet making choices on the correct information to use

Computer Systems and Networks
• Navigate and access internet tools and comment on the effectiveness of the tool</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Address book, attachment, CC, BCC, communication, compose, Email, inbox, password, personal information, draft, trusted contact</td></tr>
</table>

Year 3/4 Computing Cycle B: Online Safety and Email – Autumn 1					
How can I send a message quickly and safely?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	
How do we communicate?	**What is an e-mail?**	**How can I ensure it is safe?**	**How can I ensure it is safe?**	**What can I send?**	**What decisions do I need to make?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that there are different ways that we communicate including a range of ways online	Know that emails are used to send instant messages to others across the Internet	Know that email is an easy way to share information with others but does have its risks	Know that email is an easy way to share information with others but does have its risks	Know that an attachment is something that can be sent with an email and can include files and images	Know that I must make decisions on what information I should reply with depending on the sender of the email
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Using Technology Safely Y3 – Explain the benefits of communicating online Y4 – Explain the benefits and dangers of communicating online	**Computer Systems and Networks** Y3 – Navigate and access Internet tools Y4 – Navigate and access internet tools and comment on the effectiveness of the tool	**Using Technology Safely** Y3 – Describe ways to stay safe online Y4 – Describe ways to stay safe online and what to do if you have a problem	**Using Technology Safely** Y3 – Describe ways to stay safe online Y4 – Describe ways to stay safe online including how to protect personal information	**Creating Media** Y3 – Combine software using the Internet to create content Y4 – Combine software using the Internet making choices on the correct information to use	**Using Technology Safely** Y3 – Use acceptable behaviour and use technology responsibly Y4 - Use acceptable behaviour and use technology responsibly and identify how to report concerns.
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	
KS1 – Children have learnt about following rules can keep us safe online	*Y4 only – Children have learnt how computer networks are created and how they are linked together*	*Online Safety Lessons – Children have learnt about personal information and how to keep it safe and know how to report problems.* *Y4 only – Children have learnt effective use of passwords to protect data*	*Y4 only – Children have learnt effective use of passwords to protect data*	*KS1 – Children have learnt that work can be saved and revisited at a later pont*	*Online Safety Lessons – Children have learnt about personal information and how to keep it safe and know how to report problems.*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: Desktop Publishing</th><th>Term: Autumn 2</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Create a range of content that accomplish given goals including presenting information</td><td colspan="3">Know that text and images can be used to communicate information and these must be chosen carefully
Know that content can be created and moved around a page to find the best place for it
Know that templates can help develop an effective design
Know what the role of an editorial designer is
Know that combining text and images into a template can create a design
Know that information can be presented in different ways and this is always for a purpose</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Creating Media
Select and explain why certain media is used
Create content that accomplishes a specific goal
Select and use software to design content
Think critically about their own work</td><td>Creating Media
Comment on the effectiveness of different media and its uses
Create a range of content to accomplish multiple goals
Make choices on how information will be presented
Design content that accomplishes a specific goal and think critically about their own work
Think critically about their own and other's work</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.</td></tr>
</table>

Year 3/4 Computing Cycle B: Desktop Publishing – Autumn 2				
How do I get someone's attention?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How do I share information effectively?	**Can you edit it?**	**How do I structure my content?**	**How do I become a designer?**	**How does it look?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that text and images can be used to communicate information and these must be chosen carefully	Know that content can be created and moved around a page to find the best place for it	Know that templates can help develop an effective design Know what the role of an editorial designer is	Know that combining text and images into a template can create a design	Know that information can be presented in different ways and this is always for a purpose
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y3 -Select and explain why certain media is used Y4 – Comment on the effectiveness of different media and its uses	**Creating Media** Y3 – create content that accomplishes a specific goal Y4 – Create a range of content to accomplish multiple goals	**Creating Media** Y3 – Create content that presents information in a particular way Y4 – Make choices on how information will be presented	**Creating Media** Y3 – Select and use software to design content Y4 – Design content that accomplishes a specific goal and think critically about their own work	**Creating Media** Y3 – Think critically about their own work Y4 – Think critically about their own and other's work
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y4 only – Children have used different fonts and images to create PowerPoint presentations	*KS1 Children have learnt how to create digital pictures both painting and photography*	*Y4 only - Children have used different fonts and images to create PowerPoint presentations*	*KS1 - Children have learnt how to create digital pictures both painting and photography* *Y4 only - selected information to be included in a PowerPoint presentation*	*Y4 only Discussed their own presentations and improved them*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: Stop Motion</th><th>Term: Spring 1</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Select, use and combine a variety of software on a range of digital devices to design and create content that accomplish given goals, including presenting and evaluating information</td><td colspan="3">• Know that animation is the process of making a still image move
• Know that each picture used in stop motion is called a frame
• Know that the job of an animator is to bring images to life
• Know that an animation is carefully planned to prevent missing frames
• Know that every frame is important for a realistic stop motion effect
• Know that there are always improvements that can be made to improve created media</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Creating Media
➢ Create content to accomplish given goals
➢ Use a device to create software-based media with support
➢ Plan which content will be used to accomplish a given goal
➢ Create content that accomplishes a given goal
➢ Comment on other students' work suggesting an improvement</td><td>Creating Media
➢ Create content to accomplish their own goal
➢ Use a device to create software-based media independently
➢ Describe content that can be used to create effective media to accomplish a given goal
➢ Create content that accomplishes a given goal and explain how it achieved the outcome
➢ Think critically about others' work</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition</td></tr>
</table>

Year 3/4 Computing Cycle B: Stop Motion – Spring 1				
How does it move?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
Can a picture move?	**How do we make it move?**	**What's the story?**	**How do I know it is good?**	**How do I make it better?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that animation is the process of making a still image move	Know that each picture used in stop motion is called a frame	Know that the job of an animator is to bring images to life Know that an animation is carefully planned to prevent missing frames	Know that every frame is important for a realistic stop motion effect	Know that there are always improvements that can be made to improve created media
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y3 – Create content to accomplish given goals Y4 – Create content to accomplish their own goal	**Creating Media** Y3 – Use a device to create software-based media with support Y4 – Use a device to create software-based media independently	**Creating Media** Y3 – Plan which content will be used to accomplish a given goal Y4 – Describe content that can be used to create effective media to accomplish a given goal	**Creating Media** Y3 – Create content that accomplishes a given goal Y4 – Create content that accomplishes a given goal and explain how it achieved the outcome	**Creating Media** Y3 – Comment on other students' work suggesting an improvement Y4 – Think critically about others' work
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y4 only Children have learnt how to animate slides in PowerPoint	*KS1 - Children have learnt how to use different software on tablets to create effective photographs*	*Y3/4 Cycle B DTP Children have designed templates to use in their work to plan their design*	*KS1 – Children have edited photographs using different effects*	*Y4 only – Children have commented on design work when developing PowerPoints in Cycle A*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: Spreadsheets</th><th>Term: Spring 2</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:
Select, use and combine a variety of software on a range of digital devices to design and create systems and content that accomplish specific goal including, collecting, analysing, evaluating and presenting data</td><td colspan="3">• Know key vocabulary of cell, row and column
• Know that spreadsheets can create different types of graphs
• Know that every cell has an address that is alphanumeric where the column is defined by a letter, and the row is defined by a number
• Know that the formula bar is used in a spreadsheet to calculate
• Know that different tools can be combined in a spreadsheet to find answers
• Know that more than one sheet can be added to a spreadsheet for additional information and organisation</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Data and Information
➢ Gather and analyse data using a block/bar graph
➢ Make choices on the data that is needed to accomplish a specific task

Creating Media
➢ Use software to create media for a purpose by following given instructions</td><td>Data and Information
➢ Gather and analyse data using bar and pie chart and decide which is best suited for the task
➢ Use a range of data types and select the most appropriate to accomplish a specific task

Creating Media
➢ Use software to create media and add additional information using skills taught</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Data table, line graph, bar graph, equals, budget, equals tool, cell address, formula bar, range, columns, rows, data, formula</td></tr>
</table>

Year 3/4 Computing Cycle B: Spreadsheets – Spring 2				
How do I know if I have enough?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What's in a spreadsheet?	**Where can I find a cell?**	**Can it help me calculate?**	**What if I want to use more than one?**	**How can people use spreadsheets in real life?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know key vocabulary of cell, row and column Know that spreadsheets can create different types of graphs	Know that every cell has an address that is alphanumeric where the column is defined by a letter, and the row is defined by a number	Know that the formula bar is used in a spreadsheet to calculate	Know that different tools can be combined in a spreadsheet to find answers	Know that more than one sheet can be added to a spreadsheet for additional information and organisation
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Data and Information Y3 – Gather and analyse data using a block/bar graph Y4 – Gather and analyse data using bar and pie chart and decide which is best suited for the task	**Creating Media** Y3 – Use software to create media for a purpose by following given instructions Y4 – Use software to create media and add additional information using skills taught	**Data and Information** Y3 – Make choices on the data that is needed to accomplish a specific task Y4 – Use a range of data types and select the most appropriate to accomplish a specific task	**Data and Information** Y3 – Make choices on the data that is needed to accomplish a specific task Y4 – Use a range of data types and select the most appropriate to accomplish a specific task	**Data and Information** Y3 – Make choices on the data that is needed to accomplish a specific task Y4 – Use a range of data types and select the most appropriate to accomplish a specific task
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
KS1 Children have used the software to create simple block charts and used the vocabulary	*KS1 Children have navigated a spreadsheet inserting data into different cells*	*KS1 Children have used the sigma symbol to add up rows and columns*	*KS1 Children have used the sigma symbol to add up rows and columns*	*KS1 Children have learnt about different uses of technology beyond school*

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Programming</th><th>Term: Summer 1</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs that accomplish specific tasks; solve problems by decomposing them into smaller parts

Use repetition in programs

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</td><td colspan="3">• Know that commands in text-based programming require specific code to work
• Know that a programmable object can be called a sprite
• Know that using algorithms helps us plan specific instructions for a program to follow
• Know that repetition in programming is when the same code can be used multiple times to complete a task
• Know that a loop is when something is done repeatedly
• Know that breaking down programming tasks into smaller parts creates better programs</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Programming
➢ Give instructions for a specific task
➢ design algorithms and program code debugging mistakes with support
➢ Use repetition in programs to achieve a specific goal
➢ Use logical reasoning to explain how simple algorithms work
➢ Solve problems by decomposing them into smaller parts</td><td>Programming
➢ Give instructions for a specific task and change values commenting on the effect
➢ Design, write and debug code following written algorithms
➢ Use repetition in programs and explain why this method is more effective
➢ Use logical reasoning to predict the outcome of a program
➢ Decompose a problem and debug each part</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.</td></tr>
</table>

Year 3/4 Computing Cycle B: Repetition in Programming – Summer 1				
When does repeating the same thing become effective?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How do I make it move?	**Can I write using code?**	**Can I do this any quicker?**	**What is a loop?**	**How do I make things easier?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that commands in text-based programming require specific code to work Know that a programmable object can be called a sprite	Know that using algorithms helps us plan specific instructions for a program to follow	Know that repetition in programming is when the same code can be used multiple times to complete a task	Know that a loop is when something is done repeatedly	Know that breaking down programming tasks into smaller parts creates better programs
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y3 – Give instructions for a specific task Y4 – Give instructions for a specific task and change values commenting on the effect	**Programming** Y3 – design algorithms and program code debugging mistakes with support Y4- Design, write and debug code following written algorithms	**Programming** Y3 – Use repetition in programs to achieve a specific goal Y4 – Use repetition in programs and explain why this method is more effective	**Programming** Y3 – Use logical reasoning to explain how simple algorithms work Y4 – Use logical reasoning to predict the outcome of a program	**Programming** Y3 – Solve problems by decomposing them into smaller parts Y4 – Decompose a problem and debug each part
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
KS1 Children have used commands with Beebots to make a robot move specifying number of steps and turns	*KS1 Children have used commands with Beebots to make a robot move specifying number of steps and turns and know that algorithms are clear instructions*	*KS1 have repeated programs to program a robot and sprite using Beebots and Scratch Junior respectively*	*KS1 Children have learnt how to predict what they think will happen when a robot is programmed using reasoning skills*	*KS1 Have learnt how to write and debug algorithms after testing them in programming*

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Programming</th><th>Term: Summer 2</th><th>Year: 3/4 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs that accomplish specific tasks; solve problems by decomposing them into smaller parts

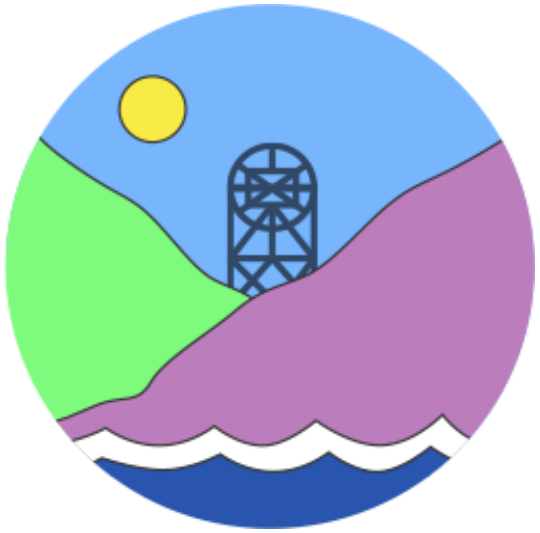
Use repetition in programs

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</td><td colspan="3">• Know that programming can use different language depending on the software used
• Know that block programming is a type of programming
• Know that motion blocks are used to move a sprite
• Know that similar tasks can be undertaken using different programming language
• Know that infinite loops will follow the code forever and count controlled loops do something a specified number of times
• Know that changes in values affect how a program functions</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 3</td><td>Disciplinary Skills – Year 4</td></tr>
<tr><td colspan="2">Programming
➢ Compare programming inputs
➢ Use logical reasoning to explain how a simple algorithm works
➢ Use repetition in programs and change values to accomplish a specific goal
➢ design, write and debug programs that accomplish specific goals
➢ Decompose problems into smaller parts to solve them</td><td>Programming
➢ Use logical reasoning to explain errors before correcting them
➢ Debug programs that accomplish specific goals
➢ Comment on their preferred programming language and explain why
➢ Use different types of repetition and make decisions on which is most effective for the task and change values depending on the audience
➢ design, write and debug programs for a specific audience
➢ Decompose problems into smaller parts to solve them</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.</td></tr>
</table>

Year 3/4 Computing Cycle B: Repetition in Programming 2 – Summer 2					
How can I use repetition to design a game?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is Scratch? *	**How does it move? ***	**What's the same? What's different?**	**Which loop is best?**	**What should I change?**	**How will it be created?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that programming can use different language depending on the software used Know that block programming is a type of programming	Know that motion blocks are used to move a sprite	Know that similar tasks can be undertaken using different programming language	Know that infinite loops will follow the code forever and count controlled loops do something a specified number of times	Know that changes in values affect how a program functions	Know that changes in values affect how a program functions
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y3 – Compare programming inputs Y4 – Use logical reasoning to explain errors before correcting them	**Programming** Y3 – Use logical reasoning to explain how a simple algorithm works Y4 – Debug programs that accomplish specific goals	**Programming** Y3 – Use logical reasoning to predict the outcome of an algorithm Y4 – Comment on their preferred programming language and explain why	**Programming** Y3 – Use repetition in programs Y4 – Use different types of repetition and make decisions on which is most effective for the task	**Programming** Y3 – Use repetition in programs and change values to accomplish a specific goal Y4 – Use different types of repetition and make decisions on which is most effective for the task and change values depending on the audience	**Programming** Y3 – design, write and debug programs that accomplish specific goals Y4 – design, write and debug programs for a specific audience Both - Decompose problems into smaller parts to solve them
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	
Y3/4 Cycle B Summer 1 Used repetition using the Logo platform *Y4 only learnt the basics of scratch using sequencing*	*Y3/4 Cycle B Summer 1 – Used code to move a sprite around a screen* *KS1 Programmed a robot to follow directions and moved a sprite in*	*KS1 – Experienced some difference in programming by comparing Scratch Junior to programming using a Beebot.*	*Y3/4 Cycle B Summer 1 – Children have learnt why repetition helps when programming to save time and used repeat loops*	*Y3/4 Cycle B Summer 1 – Children have learnt why repetition helps when programming to save time*	*Y3/4 Cycle B Summer 1 – Children have experience designing a program by breaking it down into smaller parts* *KS1 Learnt how to create and debug*

	Scratch Junior				*simple programs using Beebots*

* *There will need to be an introduction each year due to the 2-year cycle to allow all age groups to be introduced to this programming software every year. Children who have already been introduced in the previous year will be given independent tasks to do using the programme.*



Year 5/6

Cycle A

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Digital Literacy: Communicate and Collaborate</th><th>Term: Autumn 1</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Understand computer networks including the internet and the opportunities they offer for communication and collaboration</td><td colspan="3">• Know how to use SMART rules to help stay safe online
• Know that it is an individual's responsibility to keep themselves and others safe online
• Know that passwords need to be maintained to stay secure
• Know that images can be manipulated for good and bad purposes
• Know that information and different media can be sent over the Internet in different ways
• Know that working collaboratively on the internet can be public or private
• Know that there are a variety of ways to communicate over the Internet
• Know that communication on the Internet may not be private</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Using Technology Safely
➢ Understand the impact of sharing information online
➢ Explain how to protect identities and the impact of sharing online
➢ Recognise acceptable and unacceptable use of materials online
➢ Compare different ways to communicate online

Computer Systems and Networks
➢ Use physical media to access a range of features including the Internet
➢ Explain how the internet provides opportunities for communication</td><td>Using Technology Safely
➢ Explain the impact of sharing online and give advice on how to handle any problems
➢ Explain ways sharing content can be both safe and unsafe
➢ Explain ways in which it is acceptable to use other people's work
➢ Compare and make decisions when and when not to share information online
Computer Systems and Networks
• Access and use shared files on the Internet to collaborate
• Choose appropriate methods of communication for different purposes</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">communication, protocol, data, address, header, chat, explore, slides, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many.</td></tr>
</table>

Year 5/6 Computing Cycle A: Communicate and Collaborate – Autumn 1					
How do I work with someone who isn't with me?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
Is it my responsibility?	**What should I share?**	**How can we collaborate?**	**Can I use someone else's work?**	**What is the best way to communicate?**	**How do I maintain security online?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know how to use SMART rules to help stay safe online Know that it is an individual's responsibility to keep themselves and others safe online	Know that passwords need to be maintained to stay secure Know that images can be manipulated for good and bad purposes	Know that information and different media can be sent over the Internet in different ways	Know that working collaboratively on the internet can be public or private	Know that there are a variety of ways to communicate over the Internet	Know that communication on the Internet may not be private
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Using Technology Safely Y5 – Understand the impact of sharing information online Y6 – Explain the impact of sharing online and give advice on how to handle any problems	**Using Technology Safely** Y5 – Explain how to protect identities and the impact of sharing online Y6 – Explain ways sharing content can be both safe and unsafe	**Computer Systems and Networks** Y5 – Use physical media to access a range of features including the Internet Y6 – Access and use shared files on the Internet to collaborate	**Using Technology Safely** Y5 – Recognise acceptable and unacceptable use of materials online Y6 – Explain ways in which it is acceptable to use other people's work	**Computer Systems and Networks** Y5 - Explain how the internet provides opportunities for communication Y6 – Choose appropriate methods of communication for different purposes	**Using Technology Safely** Y5 – Compare different ways to communicate online Y6 – Compare and make decisions when and when not to share information online
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Online Safety: Children have online safety lessons once every half term focusing on different ways to stay safe *LKS2 – Children have explained ways to stay safe online*	*LKS2: Children have already looked at generating passwords to keep themselves safe* *LKS2: Shared information through Purple Mash email* *KS1: Manipulated photographs*	*LKS2: Children have learnt how a network is made up of a number ofdevices*	*Online Safety: Children have online safety lessons once every half term focusing on different ways to stay safe* *LKS2: Used collaboration tools through Purple Mash to share ideas*	*LKS2: Discussed different ways to communicate and have been using email*	*Online Safety: Children have online safety lessons once every half term focusing on different ways to stay safe* *LKS2: Used email and have discussed the risks of sharing*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Word Processing</th><th>Term: Autumn 2</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Select, use and combine a variety of software to create a range of content that accomplish given goals including presenting data and information</td><td colspan="3">• Know that word processing allows you to write, edit and print documents
• Know how to add images to a word document
• Know that not all images can be copied without permission
• Know that images can be edited to enhance a document including their positions in relation to the text
• Know that formatting means changing the appearance of the text including size, bold, underlined or in italics
• Know that documents have features that can enhance its functionality including text boxes, shapes and hyperlinks</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Creating Media
➢ Create software-based media for a purpose
➢ Create a multi-media piece of work using a range of features
➢ Create software-based media for a purpose and think critically about their own work and others
➢ Create content that uses a variety of features
➢ Combine a range of features to create media for a specific purpose</td><td>Creating Media
➢ Create software-based media and make decisions on the most effective way to present
➢ Create a multi-media piece of work making choices on the most effective media to use
➢ Create software-based media for a purpose and suggest improvements to other people's work
➢ Create content making decisions on the most effective way to present their information
➢ Make critical choices on which media to use to create an effective piece of media for a purpose</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Bulleted list, caps lock, captions, copy, paste, copyright, cursor, document, font, hyperlink, merge cells, page orientation, formatting, readability, text wrapping</td></tr>
</table>

Year 5/6 Computing Cycle A: Word Processing – Autumn 2				
How do I create a written piece of work digitally?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is word processing?	**How can I use images to help create an engaging document?**	**How can I manipulate an image for a purpose?**	**How do I change the appearance of the text?**	**Does my document function as intended?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that word processing allows you to write, edit and print documents	Know how to add images to a word document Know that not all images can be copied without permission	Know that images can be edited to enhance a document including their positions in relation to the text	Know that formatting means changing the appearance of the text including size, bold, underlined or in italics	Know that documents have features that can enhance its functionality including text boxes, shapes and hyperlinks
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y5 – Create software-based media for a purpose Y6 – Create software-based media and make decisions on the most effective way to present	**Creating Media** Y5 – Create a multi-media piece of work using a range of features Y6 – Create a multi-media piece of work making choices on the most effective media to use	**Creating Media** Y5 – Create software-based media for a purpose and think critically about their own work and others Y6 – Create software-based media for a purpose and suggest improvements to other people's work	**Creating Media** Y5 – Create content that uses a variety of features Y6 – Create content making decisions on the most effective way to present their information	**Creating Media** Y5 – Combine a range of features to create media for a specific purpose Y6 – Make critical choices on which media to use to create an effective piece of media for a purpose
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have learnt how to manipulate text in PowerPoint presentations	*LKS2: Children have added pre-saved images to their presentations in PowerPoint*	*KS1: Photographs have been edited using different features* *LKS2: Size and position of images have been considered in PowerPoint*	*LKS2: Children combined features using templates in desktop publishing*	*LKS2: Developed a magazine cover using desktop publishing software*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Computer Networks</th><th>Term: Spring 1</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Understand computer networks including the Internet: how they can provide multiple services, such as the worldwide 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</td><td colspan="3">• Know that a computer system is made up of different parts.
• Know that computer systems are used to make our lives easier and to keep us safe online
• Know that searching online uses search engines and the address bar
• Know that searches don't always return the results someone is looking for and different search engines return different results
• Know that search engines use indexes that are created using web crawlers
• Know web crawlers are programs that examine all webpages
• Know that content on a website affects where it is ranked in a search engine</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Computer Systems and Networks
➢ Identify devices that provide inputs and outputs
➢ Explain how inputs and outputs are used in given systems

Use Technology Safely
➢ Scrutinise websites for appropriate content
➢ Explain how results in a search are selected
➢ Appreciate and explain how results are ranked</td><td>Computer Systems and Networks
➢ Describe how devices use inputs and outputs
➢ Identify systems that use inputs and outputs and explain the benefits

Use Technology Safely
➢ Use search engines appropriately and evaluate the content shown
➢ Explain how to refine a search so the correct searches are selected
➢ Explain how to improve rankings in search engines</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.</td></tr>
</table>

Year 5/6 Computing Cycle A: Computer Networks – Spring 1				
Why is it in that order?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What's in a system?	**What do we use computer systems for?**	**How do I find it?**	**How does it find things so quickly?**	**Why are they in that order?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a computer system is made up of different parts.	Know that computer systems are used to make our lives easier and to keep us safe online	Know that searching online uses search engines and the address bar Know that searches don't always return the results someone is looking for and different search engines return different results	Know that search engines use indexes that are created using web crawlers Know web crawlers are programs that examine all webpages	Know that content on a website affects where it is ranked in a search engine
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Computer Systems and Networks Y5 – Identify devices that provide inputs and outputs Y6 – Describe how devices use inputs and outputs	**Computer Systems and Networks** Y5 – Explain how inputs and outputs are used in given systems Y6 – Identify systems that use inputs and outputs and explain the benefits	**Using Technology Safely** Y5 – Scrutinise websites for appropriate content Y6 – Use search engines appropriately and evaluate the content shown	**Use Technology Safely** Y5 – Explain how results in a search are selected Y6 – Explain how to refine a search so the correct searches are selected	**Use technology safely (unplugged)** Y5 – Appreciate and explain how results are ranked Y6 – Explain how to improve rankings in search engines
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have learnt about computer networks and how devices use inputs, processes and outputs	*LKS2: Children have learnt about computer networks and how devices use inputs, processes and outputs*	*LKS2: Children have used Google to find information about a given topic*	*LKS2: Children have used Google to find information about a given topic*	*LKS2: Children have used Google to find information about a given topic*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Crumble Programming</th><th>Term: Spring 2</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs the accomplish specific goals including controlling or simulating physical systems; solve problems by decoding them into smaller parts

Use selection in programs and work with various forms of input and output

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms in programs</td><td colspan="3">• Know that a microcontroller controls components attached to it by following programs
• Know that microcontrollers can control more than one component using sequencing and repetition
• Know that a condition can either be true or false and trigger actions in programs
• Know that selection uses the if…then structure to represent conditions and actions
• Know that selection can be used to control multiple components depending on the condition</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Programming
➢ Use different inputs to control outputs
➢ Use more than one output
➢ Write a program that accomplishes a specific goal
➢ Use logical reasoning to identify parts of an algorithm and predict how it works
➢ Create two outputs using selection</td><td>Programming
➢ Select the best input to create a desired output
➢ Design sequences that control more than one output dependent on the input
➢ Design and write a program that accomplishes specific goals
➢ Describe how an output will work in an algorithm dependent on conditions
➢ Create multiple outputs using different inputs and selection</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer</td></tr>
</table>

Year 5/6 Computing Cycle A: Selection in Programming 1 – Spring 2				
What type of crumble is this?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What does this tiny device do?	**How many things?**	**Which conditions are perfect?**	**What should I select?**	**What is needed to make it work?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a microcontroller controls components attached to it by following programs	Know that microcontrollers can control more than one component using sequencing and repetition	Know that a condition can either be true or false and trigger actions in programs	Know that selection uses the if…then structure to represent conditions and actions	Know that selection can be used to control multiple components depending on the condition
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y5 – Use different inputs to control outputs Y6 – Select the best input to create a desired output	**Programming** Y5 – Use more than one output Y6 – Design sequences that control more than one output dependent on the input	**Programming** Y5 – Write a program that accomplishes a specific goal Y6 – Design and write a program that accomplishes specific goals	**Programming** Y5 – Use logical reasoning to identify parts of an algorithm and predict how it works Y6 – Describe how an output will work in an algorithm dependent on conditions	**Programming** Y5 – Create two outputs using selection Y6 – Create multiple outputs using different inputs and selection
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have used repetition in Scratch and Logo to make an action repeat a selected amount of times	*KS1: Children have created a sequence of instructions to control a robot* *LKS2: Used sequencing and repetition to control sprites in block programming language*	*LKS2: Children have used count controlled loops in Scratch programming to control a sprite*	*LKS2: Used forever loops to continually repeat the sequence a program is using* *LKS2: They have predicted what an algorithm would do*	*LKS2: Programmed multiple sprites that moved dependent on the input from the keyboard (event)*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Scratch Programming</th><th>Term: Summer 1</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Design, write and debug programs the accomplish specific goals including controlling or simulating physical systems; solve problems by decoding them into smaller parts

Use selection in programs and work with various forms of input and output

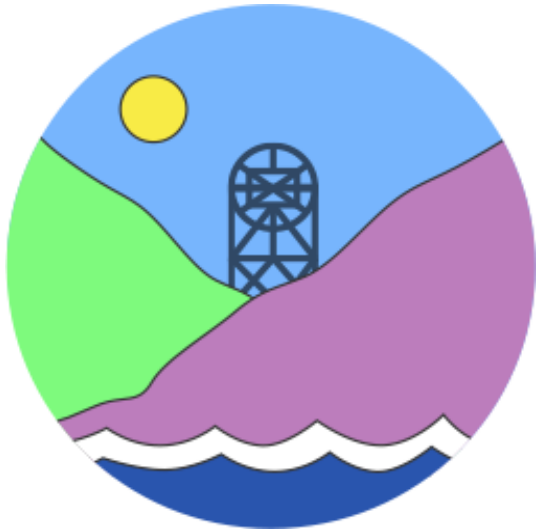
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms in programs</td><td colspan="3">• Know that block programming condition blocks are hexagonal and need to be used with other blocks
• Know that selection can include an else in its structure to affect the outcome depending on which condition is met
• Know that conditions can direct the flow of a program in one of two ways depending on the condition
• Know that outcomes will be selected based on responses given
• Know that debugging programs in small parts helps create an effective program</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Programming
➢ Identify conditions in a program and what the output will be
➢ Create programs with different outcomes using selection
➢ Use logical reasoning to explain what a program represents
➢ Develop an algorithm and explain how it works using the structure provided
➢ Solve problems by decomposing them into smaller steps debugging at the end of each step</td><td>Programming
➢ Explore different conditions and how it can affect an output
➢ Explain how selection works to create different outcomes
➢ Explain the reasons why a program is correct
➢ Develop their own algorithm that uses selection
➢ Solve problems by decomposing them into smaller parts and suggesting improvements to other people' programs</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator</td></tr>
</table>

Year 5/6 Computing Cycle A: Selection in Programming 2 – Summer 1				
If this is the answer what is the question?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What conditions do I need again?	**What else is there?**	**What will happen?**	**What do I want to happen?**	**What's the outcome?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that block programming condition blocks are hexagonal and need to be used with other blocks	Know that selection can include an else in its structure to affect the outcome depending on which condition is met	Know that conditions can direct the flow of a program in one of two ways depending on the condition	Know that outcomes will be selected based on responses given	Know that debugging programs in small parts helps create an effective program
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y5 – Identify conditions in a program and what the output will be Y6 -Explore different conditions and how it can affect an output	**Programming** Y5 – Create programs with different outcomes using selection Y6 – Explain how selection works to create different outcomes	**Programming** Y5 – Use logical reasoning to explain what a program represents Y6 – Explain the reasons why a program is correct	**Programming** Y5 – Develop an algorithm and explain how it works using the structure provided Y6 – Develop their own algorithm that uses selection	**Programming** Y5 – Solve problems by decomposing them into smaller steps debugging at the end of each step Y6 – Solve problems by decomposing them into smaller parts and suggesting improvements to other people' programs
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have used different events to affect how a sprite is controlled	*LKS2: Children have used different events to affect how a sprite is controlled*	*LKS2: Children have used a branching structure in their database unit*	*LKS2: Children have written and executed programs from algorithms using repetition and sequencing*	*LKS2: Children have used Logo and broken down problems into smaller parts*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Databases</th><th>Term: Summer 2</th><th>Year: 5/6 Cycle A</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Select and use a variety of software (including Internet services) to design and create a range of programs, systems and content that accomplish given goals, including collecting analysing, evaluating and presenting data and information</td><td colspan="3">• Know that a collection of data is called a database, a single file is a record and one piece of information is a field
• Know that fields can be used to sort data by answering a given question
• Know that data can be grouped using one or more chosen values
• Know that databases are used to store a lot of data easily and make it easy to sort
• Know that databases have search features to allow the user to condense data to get desired data
• Know that databases may need information from more than one field to answer a question</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Data and Information
➢ Order, sort and group data to answer questions
➢ Sort and analyse data to accomplish given goals
➢ Use a search function to collect data
➢ Refine a search to analyse and evaluate data</td><td>Data and Information
➢ Explain how information can be recorded and analysed to answer questions
➢ Explain how data has been sorted to help analyse data
➢ Use a range of search functions to collect different groups of data
➢ Choose different search functions to analyse and evaluate data
➢ Make decisions on which data needs analysing to find answers</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.</td></tr>
</table>

Year 5/6 Computing Cycle A: Flat File Databases – Summer 2				
How can I organise all of this data?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What's a database again?	**What are the benefits of digital databases?**	**How is it sorted?**	**What if I want more information?**	**How is this used in real life?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a collection of data is called a database, a single file is a record and one piece of information is a field	Know that fields can be used to sort data by answering a given question	Know that data can be grouped using one or more chosen values Know that databases are used to store a lot of data easily and make it easy to sort	Know that databases have search features to allow the user to condense data to get desired data	Know that databases may need information from more than one field to answer a question
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Data and Information (Unplugged) Y5 – Order, sort and group data to answer questions Y6 - Explain how information can be recorded and analysed to answer questions	**Data and Information** Y5 – Sort and analyse data to accomplish given goals Y6 – Explain how data has been sorted to help analyse data	**Data and Information** Y5 – Use a search function to collect data Y6 – Use a range of search functions to collect different groups of data	**Data and Information** Y5 – Use a search function to collect data Y6 – Choose different search functions to analyse and evaluate data	**Data and Information** Y5 – Refine a search to analyse and evaluate data Y6 – Make decisions on which data needs analysing to find answers
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have learnt how to create a branching database	*LKS2: Children have analysed data using closed questions to sort information to identify an object*	*LKS2: Children have considered which questions will effectively sort their data into roughly equal groups in a branching database*	*LKS2: Children have considered which questions will effectively sort their data into roughly equal groups in a branching database*	*LKS2: Children have used effective questioning to sort data*



Year 5/6

Cycle B

Computing Sequences of Learning

<table>
<tr><th colspan="2">Topics of Study: Digital Literacy: Online Safety and The Internet</th><th>Term: Autumn 1</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

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</td><td colspan="3">• Know that secure websites use https: and a padlock icon in the address bar
• Know that location sharing shares your device's location and this can be turned off for security
• Know that a digital footprint is information about a person as a result of their online activity
• Know that the Internet is a network of networks
• Know that the internet can provide many services including the worldwide web, file sharing and email
• Know that a web page is a single page on the worldwide web and a website is a collection of pages under one
• Know that websites and pages are created by people but not necessarily owned by them.
• Know that some online information may not be true, accurate or legal</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Using Technology Safely
➢ Explain the impact of sharing information online
➢ Explain how to protect identities to stay safe online
➢ Explain the rules that protect content online
➢ Explain the ways people can use information safely online

Computer Systems and Networks
➢ Explain why networks need to be secure
➢ Describe network devices and how they are connected</td><td>Using Technology Safely
➢ Describe how sharing of information can be prevented to protect identities
➢ Explain the impacts of online activity to reputation
➢ Explain the rules and identify information explaining how it can be used
➢ Explain what to do if information is not safe

Computer Systems and Networks
➢ Explain the risks a network may have in staying secure
➢ Explain how data is transferred through network devices</td></tr>
<tr><td colspan="4">Vocabulary</td></tr>
<tr><td colspan="4">Internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts</td></tr>
</table>

Year 5/6 Computing Cycle B: Online Safety and the Internet – Autumn 1					
How is it all connected?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
How does it know where I am?	**How does it know who I am?**	**How does data travel around the world?**	**What is the internet made of?**	**Who owns the web?**	**Can I believe what I read?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that secure websites use https: and a padlock icon in the address bar Know that location sharing shares your device's location and this can be turned off for security	Know that a digital footprint is information about a person as a result of their online activity	Know that the Internet is a network of networks	Know that the internet can provide many services including the worldwide web, file sharing and email Know that a web page is a single page on the worldwide web and a website is a collection of pages under one name	Know that websites and pages are created by people but not necessarily owned by them.	Know that some online information may not be true, accurate or legal
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Using Technology Safely Y5 – Explain the impact of sharing information online Y6 – Describe how sharing of information can be prevented to protect identities	**Using Technology Safely** Y5 – Explain how to protect identities to stay safe online Y6 – Explain the impacts of online activity to reputation	**Computer Systems and Networks** Y5 – Explain why networks need to be secure Y6 – Explain the risks a network may have in staying secure	**Computer Systems and Networks** Y5 – Describe network devices and how they are connected Y6 – Explain how data is transferred through network devices	**Using Technology Safely** Y5 – Explain the rules that protect content online Y6 – Explain the rules and identify information explaining how it can be used	**Using Technology Safely** Y5 – Explain the ways people can use information safely online Y6 – Explain what to do if information is not safe
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have learnt about age ratings and spoof websites	*UKS2 Cycle A: Y6 only: Children have learnt what a database is and how to use it to find information*	*LKS2: Children have learn that a network is a group of devices that are connected together*	*LKS2: Children have learnt that email sends massages across the internet*	*LKS2: Children have learnt how to keep their own information safe online*	*LKS2: Websites have been scrutinised for accurate content by the children to identify spoofs*

<table>
<tr><th colspan="2">Topics of Study: Information Technology - Blogging</th><th>Term: Autumn 2</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems</td><td colspan="3">• Know that a blog is a web page that is written in a conversational style about something you have an opinion on that needs to be updated regularly
• Know that it is important to be knowledgeable about a subject before writing a blog
• Know that blogs need to be presented in a way that engages an audience
• Know that blogs create a platform for communication through comments and additional posts</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Creating Media
➢ Identify the features of a specific media type
➢ Create media for the purpose of providing information
➢ Think critically about own and others' work giving constructive feedback

Computer Systems and Networks
➢ Use physical media to access shared files</td><td>Creating Media
➢ Explain ways to be successful in creating a specific media type
➢ Create media to provide information and think critically about its effect
➢ Think critically about others' work suggesting improvements

Computer Systems and Networks
• Use physical media to access and comment on shared files</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Approval, archive, blog, blog post, collaborate, vlog, commenting, engage, audience, conversational, platform for communication</td></tr>
</table>

Year 5/6 Computing Cycle B: Blogging – Autumn 2			
What are you interested in?			
Session 1	**Session 2**	**Session 3**	**Session 4**
Key Question	**Key Question**	**Key Question**	**Key Question**
What is a blog?	**What should I write about?**	**What is it all about?**	**What's my opinion?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a blog is a web page that is written in a conversational style about something you have an opinion on that needs to be updated regularly	Know that it is important to be knowledgeable about a subject before writing a blog	Know that blogs need to be presented in a way that engages an audience	Know that blogs create a platform for communication through comments and additional posts
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y5 – Identify the features of a specific media type Y6 – Explain ways to be successful in creating a specific media type	**Computer Systems and Networks** Y5 – Use physical media to access shared files Y6 – Use physical media to access and comment on shared files	**Creating Media** Y5 – Create media for the purpose of providing information Y6 – Create media to provide information and think critically about its effect	**Creating Media** Y5 – Think critically about own and others' work giving constructive feedback Y6 – Think critically about others' work suggesting improvements
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have learnt that information pages use both text and images and need to be structured in a certain way	*LKS2: Created shared files on Purple Mash to share ideas about staying safe online* *Y6 only: Children have collaborated on shared files when learning about using the Internet for communication*	*LKS2: Children have created content that uses images and text in PowerPoint and desktop publishing*	*LKS2: Children have commented critically on others' work during designing magazine covers using desktop publishing*

<table>
<tr><th colspan="2">Topics of Study: Information Technology – Video Production</th><th>Term: Spring 1</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems</td><td colspan="3">• Know that video is a visual media format
• Know that different techniques can be used depending on the content
• Know that different camera angles can change the appearance of a person or object
• Know that storyboards are used to plan videos to ensure correct techniques are used for each part
• Know that a video producer ensures all aspects of a production are carried out
• Know that editing is used to remove and change parts of a video for a desired effect
• Know that reviewing content created is an integral part of the whole process</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Creating Media
➢ Identify the features of a specific media type
➢ Think critically about own work and the effects used
➢ Use devices to create multi-media using a variety of techniques
➢ Change media to accomplish a given goal
➢ Think critically about their own and others' work with constructive feedback</td><td>Creating Media
➢ Explain why features may be used
➢ Think critically about own work and give reasons for choices
➢ Create multi-media and explore which techniques are most effective
➢ Change media to meet their own goals
➢ Think critically about others' work suggesting improvements</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.</td></tr>
</table>

Year 5/6 Computing Cycle B: Video Production – Spring 1				
Lights, Camera, Action!				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What is video?	**How do I make it look like that?**	**What's the plan?**	**What do I want to change?**	**Did it meet the criteria?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that video is a visual media format Know that different techniques can be used depending on the content	Know that different camera angles can change the appearance of a person or object	Know that storyboards are used to plan videos to ensure correct techniques are used for each part	Know that a video producer ensures all aspects of a production are carried out Know that editing is used to remove and change parts of a video for a desired effect	Know that reviewing content created is an integral part of the whole process
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y5 – Identify the features of a specific media type Y6 – Explain why features may be used	**Creating Media** Y5 – Think critically about own work and the effects used Y6 – Think critically about own work and give reasons for choices	**Creating Media** Y5 – Use devices to create multi-media using a variety of techniques Y6 – Create multi-media and explore which techniques are most effective	**Creating Media** Y5 – Change media to accomplish a given goal Y6 – Change media to meet their own goals	**Create Media** Y5 – Think critically about their own and others' work with constructive feedback Y6 - Think critically about others' work suggesting improvements
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Understand age ratings and the reason for them	*KS1: Children have taken photographs using digital devices* *LKS2: Created stop motion videos by using still images*	*LKS2: Analysed a stop motion video and made improvements*	*KS1: Used filters to adjust photographs* *LKS2: Edited and improved stop motion videos*	*LKS2: Children have commented critically on others' work during designing magazine covers using desktop publishing*

<table>
<tr><th colspan="2">Topics of Study: Information Technology: Spreadsheets</th><th>Term: Spring 2</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

Create a range of content that accomplish specific goals, including collecting, analysing, evaluating and presenting data.</td><td colspan="3">• Know that a formula is a group of letters, numbers and symbols that can be duplicated to save time.
• Know that a computational model means recreating a real-life situation on a computer
• Know that spreadsheets can sort data to make it easier to use.
• Know that excel can use data to represent data in graph form.
• Know that spreadsheets can be used to store meaningful data that can support in real life.</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Data and Information
➢ Make use of software to perform a specific task
➢ Analyse data for a specific task
➢ Select the most appropriate tool to complete a task
➢ Analyse data using a different representation
➢ Choose the correct data required for a task</td><td>Data and Information
➢ Use software to perform a task and change values commenting on the most appropriate
➢ Analyse data and explain how changing values affects the outcome
➢ Evaluate the different tools and make decision on which is more appropriate to use
➢ Analyse and choose data appropriate for a task
➢ Choose data and change formulae to affect outcomes</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Autofit, cell, cell reference, chart, column, computational model, conditional formatting, data, formula, formulae, formula bar, graph, horizontal axis, range, spreadsheet, vertical axis, row, column, text wrapping</td></tr>
</table>

Year 5/6 Computing Cycle B: Spreadsheets – Spring 2				
How can software be used in real life?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What's the formula?	**What type of model?**	**Can I make it easier to use?**	**How can I use graphs?**	**How can it solve problems?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that a formula is a group of letters, numbers and symbols that can be duplicated to save time.	Know that a computational model means recreating a real-life situation on a computer	Know that spreadsheets can sort data to make it easier to use.	Know that excel can use data to represent data in graph form.	Know that spreadsheets can be used to store meaningful data that can support in real life.
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y5 – Make use of software to perform a specific task Y6 – Use software to perform a task and change values commenting on the most appropriate	**Data and Information** Y5 – Analyse data for a specific task Y6 – Analyse data and explain how changing values affects the outcome	**Data and Information** Y5 – Select the most appropriate tool to complete a task Y6 – Evaluate the different tools and make decision on which is more appropriate to use	**Data and Information** Y5 – Analyse data using a different representation Y6 – Analyse and choose data appropriate for a task	**Data and Information** Y5 – Choose the correct data required for a task Y6 – Choose data and change formulae to affect outcomes
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2 – Children have used the formula bar to make simple calculations	*LKS2 – Children have planned an event using a spreadsheet and used formula*	*LKS2: Children have combined tools to make it easier to use*	*KS1: Used a spreadsheet to create bar graphs* *LKS2: Children have learnt how to be selective in the data that they have used*	*LKS2 – Children have planned an event using a spreadsheet and used formula*

<table>
<tr><th colspan="2">Topics of Study: Computer Science – Game designer</th><th>Term: Summer 1</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">The national curriculum for computing aims to ensure that all pupils:

can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems

can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems</td><td colspan="3">• Know that games are a collection of elements that make it function.
• Know that video games are set in an environment that appeals to the audience
• Know that video games need an outcome so it can become playable
• Know that all created media is designed to engage an audience for the longest possible time.
• Know that all created media is designed to engage an audience for the longest possible time.
• Know that evaluating content is an important step to making a piece of media successful</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Creating Media
➢ Think critically about others' work.
➢ Create software-based media thinking critically about their own work

Programming
➢ Use a program for specific tasks - Creating an environment
➢ Use programmable software to create a playable game</td><td>Creating Media
➢ Think critically and discuss reasons why somethings work better than others.
➢ Create software-based media that has multiple outcomes
➢ Evaluate and suggest improvements to others' games

Programming
➢ Use different programs and make decisions on the most effective
➢ Use programmable software to create a playable and explain why it is effective</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Animation, image, texture, computer game, instructions, perspective, customise, interactive, evaluation, screenshot, playability</td></tr>
</table>

Year 5/6 Computing Cycle B: Game Designer – Summer 1				
How is technology used to create games?				
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What elements make it successful?	**Why is the environment important?**	**What is the outcome?**	**How can I maximise playability?**	**What is effective?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that games are a collection of elements that make it function.	Know that video games are set in an environment that appeals to the audience	Know that video games need an outcome so it can become playable	Know that all created media is designed to engage an audience for the longest possible time.	Know that evaluating content is an important step to making a piece of media successful
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Creating Media Y5 – Think critically about others' work. Y6 – Think critically and discuss reasons why somethings work better than others.	**Programming** Y5 – Use a program for specific tasks *Creating an environment* Y6 – Use different programs and make decisions on the most effective	**Creating Media** Y5 – Create software-based media thinking critically about their own work Y6 – Create software-based media that has multiple outcomes	**Programming** Y5 – Use programmable software to create a playable game Y6 – Use programmable software to create a playable and explain why it is effective	**Creating Media** Y5 – Evaluate and think critically about own and others' work. Y6 – Evaluate and suggest improvements to others' games
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
LKS2: Children have used a variety of sprites in Scratch to create a program	*LKS2: Created settings for use with stop motion animation around a theme*	*KS1: Children have created paths for a robot to navigate through*	*LKS2: Used trial and error to improve stop motion videos*	*LKS2/UKS2: Children have had numerous opportunities to reflect on their own work and evaluate others'*

<table>
<tr><th colspan="2">Topics of Study: Computer Science: Micro:Bits</th><th>Term: Summer 2</th><th>Year: 5/6 Cycle B</th></tr>
<tr><th>National Curriculum</th><th colspan="3">Key Substantive Knowledge</th></tr>
<tr><td rowspan="3">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

can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems

design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems</td><td colspan="3">• Know that physical media uses input, process and output that can be programmed
• Know that variables are changeable values in a program
• Know that different inputs can change the value of a variable
• Know that the order of commands is crucial for a program to work successfully
• Know that the sensors in a micro:bit can be used to create a tool that can be used in real life situations
• Know that programs need to be tested in small parts to ensure they work effectively</td></tr>
<tr><td colspan="2">Disciplinary Skills – Year 5</td><td>Disciplinary Skills – Year 6</td></tr>
<tr><td colspan="2">Programming
➢ Use programmable hardware and software for a purpose
➢ Use selection and variables in a program
➢ Use a condition to change a variable
➢ Use <>= in selection and explain the importance of order
➢ Complete and debug a program</td><td>Programming
➢ Use programmable hardware and software for a purpose Comment on the similarities with the coding environment
➢ Plan a flow that shows the order that commands are executed.
➢ Use a range of conditions to change a variable
➢ Modify a program to achieve a different outcome
➢ Make decisions on the variables and create a program flow for the project
➢ Test and debug their own programs</td></tr>
<tr><th colspan="4">Vocabulary</th></tr>
<tr><td colspan="4">Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.</td></tr>
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Year 5/6 Computing Cycle B: Variables in physical computing – Summer 2					
How do variables impact a program?					
Session 1	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Key Question	**Key Question**	**Key Question**	**Key Question**	**Key Question**	**Key Question**
What can a micro:bit do?	**How is selection used with variables?**	**How are the variables updated?**	**How can I use this to navigate?**	**How can it be used in real life situations?**	**How do I know that it works?**
Key Knowledge	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**	**Key Knowledge**
Know that physical media uses input, process and output that can be programmed	Know that variables are changeable values in a program	Know that different inputs can change the value of a variable	Know that the order of commands is crucial for a program to work successfully	Know that the sensors in a micro:bit can be used to create a tool that can be used in real life situations	Know that programs need to be tested in small parts to ensure they work effectively
Disciplinary Skills	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**	**Disciplinary Skills**
Programming Y5 – Use programmable hardware and software for a purpose Y6 – Use programmable hardware and software for a purpose Comment on the similarities with the coding environment	**Programming** Y5 – Use selection and variables in a program Y6 – Plan a flow that shows the order that commands are executed.	**Programming** Y5 – Use a condition to change a variable Y6 – Use a range of conditions to change a variable	**Programming** Y5 – Use <>= in selection and explain the importance of order Y6 – Modify a program to achieve a different outcome	**Programming** Y5 – Use selection and variables in a program Y6 – Make decisions on the variables and create a program flow for the project	**Programming** Y5 – Complete and debug a program Y6 – Test and debug their own programs
Prior Learning	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**	**Prior Learning**
Y6 only: Had experience using Crumble devices to have physical media do specific tasks	*LKS2: Children have learnt about sequencing and repetition in programming*	*LKS2: Children have learnt about sequencing and repetition in programming*	*LKS2: Children have used a variety of programming blocks through Scratch and text based programming using Logo and changed parts that affected the outcome*	*Y6 only: Children have used Crumbles and changed conditions to make it work*	*KS1/LKS2: Many opportunities for debugging throughout school*