Computing

EYFS

Opportunities for Computing in the Early Years

Opportunities are provided throughout the year in Reception, through use of keyboards within the 'office/teaching' area of our continuous provision.
The children in Reception are taught and have access to the use of BeeBots and use maps to learn how to code a BeeBot.
Children will also make use of iPads to create and explore digital art.

Communication & Language

- Learn new vocabulary, including; Digital, Computer, Tablet, Mouse, Keyboard, Screen, Click, Tap, Scroll, Type, Drag, Picture, Video, Sound, Game, Button, App, Internet, Password, Safe, Share

Physical Development

Fine Motor Skills

- Develops finger control and dexterity through tapping, swiping, and dragging on touchscreens.
- Improves hand-eye coordination when using a mouse to control objects on a screen.
- Strengthens grip and finger muscles through keyboard and stylus use.
- Enhances precision movements by selecting icons and tracing shapes in digital applications.

Gross Motor Skills

- Support for whole-body movement during interactive whiteboard activities or motion-based games.

Personal, Social & Emotional Development

- Communicate and explain their personal experiences with the digital world.
- Develop confidence in using technology to complete tasks, make choices, and explore digital tools independently.
- Begin to understand the importance of following rules for safe and responsible technology use, including asking for help and respecting others' work.

Literacy

- Develop intentional mark making using the interactive whiteboards.
- Develop digital writing CVC words and simple sentences using a tablet keypad or computer keyboard.

Mathematics

- Develop spatial awareness through directional commands in coding and navigation tasks.
- Engage with digital tools and applications to count objects, match quantities to numerals, and identify numbers within interactive activities.
- Technology-based resources enable exploration of 2D and 3D shapes, comparison of size and length, and understanding of positional language (e.g., "under," "next to," "above").
- Digital programs support the creation and continuation of patterns using colours, shapes, and sequences.
- Simple coding with programmable toys (e.g., Bee-Bots) develops sequencing skills, directional understanding, and logical thinking.

Understanding the World

- Children learn that technology is used in many places (home, school, community, work) and begin to identify its purpose in daily routines.
- Digital tools help children understand that actions (e.g., clicking, tapping) produce outcomes, supporting early scientific thinking.
- Children use simple programs and apps to explore virtual worlds, reinforcing concepts of navigation and interaction.
- Computing activities demonstrate how things work (e.g., how a robot moves when programmed), supporting curiosity about systems and sequences.

Expressive Arts & Design

- Develop digital painting skills using apps and exploring using tools within the apps.

Online Safety

- Technology is used at home, school and in the wider world.
- Know that adults help to keep children safe when using technology.
- Some information belongs to us and should not be shared without permission.
- Know that technology can be used to communicate with others.
- Online experiences can make people feel different emotions. Know that rules help us stay safe when using technology.
- Children will talk about experiences of using technology.
- Identify trusted adults who can help.
- Recognise simple examples of personal information.
- Explain how online experiences make them feel.
- Follow simple online safety rules.

National Curriculum Requirements

Key Stage One	Key Stage Two
Pupils should be taught to: • understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Pupils should be taught to: • design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Progression of Knowledge & Skills

<table>
<tr><td></td><td colspan="6"><u>Year One</u></td></tr>
<tr><td rowspan="3"><u>Knowledge & Skills</u>

Understanding Technology

Computer Science – Programming

Digital Literacy – Multimedia Text & Images

Digital Literacy – Multimedia Sounds & Motion

Digital Literacy – Handling Data

Online Safety</td><td colspan="2"><u>Autumn Term</u></td><td colspan="2"><u>Spring Term</u></td><td colspan="2"><u>Summer Term</u></td></tr>
<tr><td colspan="6">On a weekly basis, we retrieve Online Safety knowledge and experiences.</td></tr>
<tr>
<td><u>Technology Around Us</u>

<u>Understanding Technology</u>
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
• Recognise common uses of information technology beyond school.
• Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

<u>Computer Science – Programming</u>
• Begin to understand their influence on technology by developing their programming skills to determine output.

<u>Digital Literacy – Multimedia Text & Images</u>
• Begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology.
• Develop their skills in typing.</td>
<td><u>Online Safety</u>
• Know that information such as names, addresses and schools can be personal.
• Know that not all information should be shared online.
• Know that online actions can affect other people's feelings.
• Know that people should be treated kindly and respectfully online.
• Know that things found online can be real or make-believe.
• Know that trusted adults can help with online worries.

• Identify personal information.
• Recognise kind and unkind online behaviour.
• Explain how to be respectful online.
• Distinguish between real and imaginary online content.
• Seek help when concerned about online content and know who to speak to.

<u>Programming & Robots</u>

<u>Computer Science – Programming</u>
• Begin to understand their influence on technology by developing their programming skills to determine output.
• Begin to understand that an algorithm is a series of steps for</td>
<td><u>Digital Painting</u>

<u>Understanding Technology</u>
• Recognise common uses of technology beyond school.

<u>Digital Literacy – Multimedia Text & Images</u>
• Begin to understand the purposes technology can be used for.
• Use technology purposefully to create self-portraits, artwork inspired by Kadninksy, Mondrian and Matisse.
• Use various tools such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape.

<u>Online Safety: SAFER INTERNET DAY</u>

Review of Online Safety & yearly Internet Safety theme.</td>
<td><u>Grouping Data</u>

<u>Computer Science – Programming</u>
• Begin to understand their influence on technology by developing their programming skills to determine output.
• Control the nature of events: repeat, loops, single events and add and delete features.
• Give a set of instructions to follow and predict what will happen.

<u>Digital Literacy – Multimedia Text & Images</u>
• Begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology.
• Develop their skills in typing, selecting tools and organising information.
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</td>
<td><u>Digital Writing</u>

<u>Understanding Technology: Creating Media</u>
• Begin to make links to how they use technology outside of the classroom.
• Begin to think about the benefits of using technology in their lives, making links to learning about online safety.
• Recognise ways that technology is used in the home and community, e.g. taking photos, blogs, shopping.

<u>Digital Literacy – Multimedia Text & Images: Creating Media</u>
• Begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology.
• Develop their skills in typing, selecting tools and organising information.
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</td>
<td><u>Animations</u>

<u>Understanding Technology</u>
• Begin to make links to how they use technology outside of the classroom.

<u>Computer Science – Programming</u>
• Begin to understand their influence on technology by developing their programming skills to determine output.
• Begin to understand that an algorithm is a series of steps for solving problems and a code is a series of steps that machines can execute.
• Begin to explore debugging, predicting when codes may not work and changing them.
• Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.
• Give commands one at a time to control direction and movement, including straight, forwards, backwards, turn.
• Control the nature of events: repeat, loops, single events and add and delete features.
• Give a set of instructions to follow and predict what will happen.
• Improve/change their sequence of commands by debugging.</td>
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		solving problems. • Begin to understand a code is a series of steps that machines can execute. • Begin to explore debugging, predicting when codes may not work and changing them. • Give commands one at a time to control direction and movement, including straight, forwards, backwards, turn. • Control the nature of events: repeat, loops, single events and add and delete features. • Give a set of instructions to follow and predict what will happen. • Improve/change their sequence of commands by debugging.		**<u>Digital Literacy – Multimedia Sounds & Motion</u>** • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Save, retrieve and organise work.		
Vocabulary	**technology, computer, keyboard, typing, keys, click, drag, screen, mouse, program**	**personal information, private, online, internet, kind, unkind, respectful, trusted adult, share, communicate, feelings, real, pretend, report** **turn, left, right, clockwise, anticlockwise, debug**	**tools, brushes, pens, eraser, stamps, spray can, fill tool, undo tool, screen, program, online, digital devices, Piet Mondrian, Wassily Kandinsky, Henri Matisse, Georges Seurat**	**group, data, collection, property analyse, sort, compare**	**keyboard, type, select, toolbar, space, backspace, bold, italic, underline, enter, key**	**animation, commands, left, right, up, down, turn, algorithm, repeat, sequence, command, ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area, instruction, order, debug, clockwise, anticlockwise, blocks**

	Year Two					
	Autumn Term		**Spring Term**		**Summer Term**	
	On a weekly basis, we retrieve Online Safety knowledge and experiences.					
Knowledge & Skills **Understanding Technology** **Computer Science – Programming** **Digital Literacy – Multimedia Text & Images** **Digital Literacy – Multimedia Sounds & Motion** **Digital Literacy – Handling Data** **Online Safety**	**Computing Systems and Networks - IT Around Us** **Understanding Technology** • Develop understanding of what information technology (IT) is and will begin to identify examples. They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. • Investigate how IT improves our world, and they will learn about the importance of using IT responsibly. • Recognise ways that technology is used in the home and community, e.g. taking photos, blogs, shopping.	**Online Safety** • Know what personal information is and why it should be protected. • Know the purpose of passwords. • Know that people may behave differently online. • Know what online bullying is. • Know that information online may not always be true. • Know how and when to report concerns. • Decide whether information is safe to share. • Create and use simple secure passwords. • Identify appropriate and inappropriate online behaviour. • Describe and agree on actions to take if online bullying occurs. • Question whether online information is truthful. • Ask for support using appropriate reporting routes.	**Programming A – Robot Algorithms** **Computer Science - Programming** • Give commands one at a time to control direction and movement, including straight, forwards, backwards, turn. • Give a set of instructions to follow and predict what will happen. • Children will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. Learners will also find and fix errors in their algorithms and programs. They will understand this process to be 'debugging' • Use key vocabulary to demonstrate knowledge and understanding in this strand. **Online Safety: SAFER INTERNET DAY** Review of Online Safety & yearly Internet Safety theme.	**Programming B – An Intro to Animation & An Intro to Quizzes** **Computer Science - Programming** • Give a set of instructions to follow and predict what will happen. • Children will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. Learners will also find and fix errors in their algorithms and programs. They will understand this process to be 'debugging' • Children will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. Learners will also find and fix errors in their algorithms and programs. They will understand this process to be 'debugging' • Control the nature of events: repeat, loops, single events and add and delete features.	**Digital Photography** **Digital Literacy – Multimedia Text & Images** • Use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape. • Use applications and devices in order to communicate ideas, work, messages and demonstrate control. • Save, retrieve and organise work. • Use key vocabulary to demonstrate knowledge and understanding in this strand.	**Digital Literacy – Handling Data** **Data and Information – Pictograms** • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Begin to understand what the term data means and how data can be collected in the form of a tally chart. • Learn the term 'attribute' and use this to organise data onto software.
Vocabulary	**filter, Google, search engine, image, keyboard, email, internet, subject, address, communicate, sender, safe, secure**	**password, username, account, private, personal information, online bullying, cyberbullying, report, trusted adult, secure, reliable, unreliable, information, stranger, danger**	**algorithm, instruction, order, debug, program, turn, left, right, clockwise, anticlockwise, blocks, sequence, project, repeat, repeat forever, invisible, grow, shrink**		**paint, colour, brush, tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, size, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present**	**simple key, data, pictogram, graph, information, tally, bar, more, fewer**

	Year Three					
	Autumn Term		**Spring Term**		**Summer Term**	
	On a weekly basis, we retrieve Online Safety knowledge and experiences.					
Knowledge & Skills **Understanding Technology** **Computer Science – Programming** **Digital Literacy – Multimedia Text & Images** **Digital Literacy – Multimedia Sounds & Motion** **Digital Literacy – Handling Data** **Online Safety**	**Computer Networks** **Understanding Technology** • Understand that computers are connected in a network. • Understand why computers are networked. • Understand the difference between the Internet and the World Wide Web. • Understand how messages are transmitted between digital devices.	**Online Safety** • Know that online and offline relationships can differ. • Know that people communicate in different ways online. • Know that not everyone online is who they claim to be. • Know how online bullying can affect others. • Know that some online information may be unreliable. • Know ways to stay safe when communicating online. • Compare online and offline relationships. • Communicate respectfully using digital technologies. • Recognise signs of online bullying. • Report concerns appropriately. • Begin to evaluate information found online. • Make safe choices when communicating digitally.	**Word Processing Skills** **Digital Literacy – Multimedia Text & Images** • Use the correct fingers on a keyboard. • Edit the style and effect of my images to make my document more engaging (e.g. borders and shadows). • Use cut, copy and paste quickly to duplicate and organise text. **Online Safety: SAFER INTERNET DAY** Review of Online Safety & yearly Internet Safety theme.	**Debugging** **Computer Science – Programming** • Create algorithms for use when programming. • Identify patterns in an algorithms. • Use repetition in algorithms. • Design and create programs. • Give multiple commands at a time including controlling movement and direction. • Control the nature of events; repeat and loop algorithms. • Improve and change their sequence of commands by debugging.	**Computer Science – Programming** • Create algorithms for use when programming. • Decompose tasks into separate steps to create an algorithm. • Identify patterns in an algorithms. • Use repetition in algorithms. • Design and create programs. • Write programs that accomplish specific goals. • Use various forms of input. • Explore ways to personalise sprites, backgrounds and movements.	**PowerPoint Skills** **Digital Literacy – Multimedia Text & Images** • Insert text onto a PowerPoint slide, making conscious choices for font style, size and colour depending on purpose and audience. • Use child friendly search engines (kiddle) to locate appropriate images for PowerPoints. • Use the Snipping Tool or copy and paste skills to insert images onto a PowerPoint slide. • Select and insert animations and slide transitions onto PowerPoint slides, ensuring that the purpose and audience and kept in mind.
Vocabulary	**network, server, message, communicate, input, output, Internet, World Wide Web, digital device, electricity**	**online relationship, friendship, communicate, cyberbullying, block, report, trust, identity, fact, opinion, reliable, unreliable, digital communication, profile**	**keyboard, shortcut, space bar, control, copy, paste, return, shift, enter, placement, capitalise, underline, bold, italic, font, size, alignment, tab, paragraph**	**algorithm, bug, debug, programme, steps, repeat, decompose, app, sprite, backdrop, loop, undo, test**	**algorithm, bug, debug, programme, steps, repeat, decompose, app, sprite, backdrop, loop, undo, test**	**draw, shape, object, line, line colour, fill colour, group, ungroup, font, size, format, image, text box, move, undo, cursor, toolbar, spellcheck, highlight, menu, file, save, close, exit**

Year Four

Knowledge & Skills

Understanding Technology

Computer Science – Programming

Digital Literacy – Multimedia Text & Images

Digital Literacy – Multimedia Sounds & Motion

Digital Literacy – Handling Data

Online Safety

Autumn Term

On a weekly basis, we retrieve Online Safety knowledge and experiences.

Computing Systems and Networks: The Internet

Understanding Technology

- To describe the in internet as a network of networks and how networks physically connect to other networks.
- To demonstrate how information is shared across the internet.
- To understand why a network needs protecting.
- To describe networked devices and how they connect.
- To explain that the internet us used to provide many services.
- To recognise that the World Wide Web (WWW) contains website and webpages.
- To explain the types of media that can be shared on the WWW.
- To describe where websites are stored when uploaded to the WWW.
- To describe how to access websites on the WWW.
- To explain what media can be found on websites,
- To recognise that content can be added to the WWW.To explain that internet services can be used to create content online.
- To recognise how the content of the WWW is created by people. And suggest who owns the content on websites.

Online Safety

- Know how information can be shared rapidly online.
- Know that online content may be inaccurate, biased or misleading.
- Know the importance of protecting accounts and personal information.
- Know that digital content belongs to its creator.
- Know that permission may be needed before using another person's work.
- Know a range of reporting tools and support mechanisms.
- Assess whether information is trustworthy.
- Protect accounts using secure login practices.
- Identify copyright and ownership issues.
- Credit sources appropriately.
- Report unsafe content and contact.
- Explain the consequences of sharing information online.

Spring Term

Programming A: Repetition in Shapes

Computer Science – Programming

- To program a computer by typing commands.
- To explain the effect of changing a value of a command.
- To create a code snippet for a given purpose.
- To identify that accuracy in programming is important.
- To use a template to draw what I want my program to do.
- To write an algorithm to produce a given outcome.
- To test an algorithm in a text-based language.
- To explain what repeat means.
- To use a count-controlled loop to produce a given outcome.
- To modify a count-controlled loop to produce a given outcome.
- To identify the effect of changing the number of times a task is repeated.
- To predict the outcome of a program containing a count-controlled loop.
- To select which values to change in a loop.
- To decompose a task into small steps by identifying the 'chunks' of actions.
- To create a program that uses count-controlled loops to produce a given outcome by using a program I have designed.
- To develop a program by debugging it.

Data and Information – Data Logging (Microbits & climate change)

- Understand how our energy use can have an impact on climate change using technology and time lapses to see the effect
- To consider and plan how we might monitor our energy use at home or at school and how awareness can drive changes in behaviour
- Understand the importance of planning when collecting data to ensure it is reliable
- Program a micro:bit to take measurements of environmental data (a light meter to measure light levels)
- Understand the importance of baseline measurements and calibration when collecting data.
- To calibrate and deploy a data logger (micro:bit light timer)
- To collect environmental data (light usage) over time
- Collate and process numerical data
- Present numerical data in visual form
- Analyse data and make inferences from it about energy use
- Use these inferences to make proposals to modify behaviour to save energy
- Show how data can be analysed to drive decisions to encourage behaviour change.
- Explain how problems were approached and the skills used.
- Present complex information in a way

Summer Term

Creating Media: Photo Editing

Digital Literacy – Multimedia Text & Images

- To recognise that digital images can be manipulated and changed for different purposes.
- To explain that the composition of digital images can be changed.
- To improve an image by rotating it.
- To explain why an image might be cropped and be able to use a photo editing software to do this.
- To explain that different colour effects make you think and feel different things.
- To experiment with different colour effects.
- To apply filters to a digital image.
- To add to the composition of an image by cloning.
- To add text to a digital image.
- To identify how a photo edit can be improved.
- To remove parts of an image using cloning.
- To experiment with and use tools to select and copy part of an image.
- To combine images for a purpose.
- To evaluate how changes can improve an image.

Online Safety

- To understand that editing images can be unethical.

Programming B: Repetition in Games

Computer Science – Programming

- To develop the use of count-controlled loops.
- To list an everyday task as a set of instructions including repetition.
- To predict the outcome of a snippet of code.
- To modify a snippet of code to create a given outcome.
- To explain that in programming there are infinite loops and count-controlled loops.
- To modify loops to produce a given outcome
- To choose when to use a count-controlled and an infinite loop.
- To recognise that some programming languages enable more than one process to be run at once.
- To develop a design that includes two or more loops which run at the same time
- To choose which action will be repeated for each object
- To explain what the outcome of the repeated action should be
- To evaluate the effectiveness of the repeated sequences used in my program
- To modify an infinite loop in a given program
- To identify which parts of a loop can be changed and explain the effect of my changes.

			Online Safety: **SAFER INTERNET DAY** Review of Online Safety & yearly Internet Safety theme.	that's appropriate to the audience.		• To re-use existing code snippets on new sprites. • To design a project that includes repetition. • To develop my own design explaining what my project will do. • To create a project that includes repetition by building a program that follows my design.
Vocabulary	**internet, network, router, network security, connect, computer virus, network switch, server, wireless access point (WAP), website, webpage, web address, routing, web browser, data centres, World Wide Web (WWW), internet, content, website, web page, links, files, use, content, download**	**misinformation, trustworthy, source, copyright, ownership, permission, account, security, privacy, secure password, content, creator, digital content, bias**	**program, programming, turtle, commands, CS 'clear screen', RT 'right', LT 'left', degrees, PU 'pen up', PD 'pen down', FD 'forward', BK 'backwards', code snippets, algorithm, design, debug, home, pattern, repeat, repetition, count-contolled loop, algorithm, value, setpc (set pen colour), trace, decompose, procedure , program**	**micro:bit, energy use, climate change, climate action, global warming, sensors, temperature, light, magnetism, reliable energy usage data, reliable, collecting data, baseline measurements, calibration, timer, readings, code, time variable, collate, process, analyse, numerical, patterns**	**image, photographer, edit, digital, composition, crop, rotate, undo, photo editing software, save, ethical, adjustments, effects, colours, hue, saturation, sepia, vignette, retouch, clone, select, copy, paste, combine, made up, real, composite, cut, alter, background, foreground, rotate, zoom, clone, undo, font**	**Scratch, programming, sprite, blocks, code, loop, repeat, value, block, repeat, forever, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, sprite, algorithm, debug, refine, evaluate**

Year Five

	Autumn Term		Spring Term		Summer Term	
	On a weekly basis, we retrieve Online Safety knowledge and experiences.					
Knowledge & Skills **Understanding Technology** **Computer Science – Programming** **Digital Literacy – Multimedia Text & Images** **Digital Literacy – Multimedia Sounds & Motion** **Digital Literacy – Handling Data** **Online Safety**	**Computing Systems and Networks: Systems and Searching** **Understanding Technology** - To explain that computers can be connected together to form systems. - To describe the input, process and output of a digital system. - To explain that computer systems communicate with other devices. - To recognise the role of computer systems in our lives by identifying tasks that are managed by computer systems, the human elements of a computer system and the benefits of a given computer system. - To identify how to use a search engine by making a web search to find specific information. - To know how to refine a web search and compare results from different search engines. - To explain why search engines, create indices, and that they are different for each search engine. - To describe how search engines select results. - To recognise the role of web crawlers in creating an index. - To relate a search term to the search engine's index. - To explain how search results are ranked, order a list by rank and explain the rules to rank results. - To describe the ways that search results can be influenced. - To recognise some of the limitations of search engines. - To explain how search engines make money. **Online Safety** - To explain how personal information can be kept safe online.	**Online Safety** • Know that digital identities can be created, changed and manipulated. • Know that online activity contributes to a digital footprint. • Know that online behaviour can have long-term consequences. • Know how apps and services collect personal information. • Know that scams, fake profiles and misleading content exist online. • Know how reporting and blocking tools can be used. • Evaluate how online actions affect reputation. • Make responsible choices about presenting themselves online. • Identify potential scams and fraudulent activity. • Explain how personal data may be collected and shared. • Use reporting and blocking tools appropriately. • Contribute positively to online communities.	**Programming A: Micro:bits** **Computer Science – Programming** • To understand that a micro:bit is a tiny computer which needs instruction in code to make it work. • To understand that sets of instructions for computers in a sequence are also called algorithms or programs. • To use MakeCode editor to create instructions (an algorithm) in code that the micro:bit can understand. • To transfer the instructions to the micro:bit. • To know the micro:bit has a LED display output (which can be used to show words, numbers & pictures). • To understand that sequence and timing is important when making an animation. • To understand that animations create an illusion of movement by showing a sequence of still images. • To create a micro:bit animation using a sequence of images in a loop. • To explain that the order or sequence of instructions is important. • To code the micro:bit to show simple animations on its LED display output. • To explain that loops can make code more compact and easier to read. • To use loops to make animations run longer using fewer instructions.	**Programming B: Selection in Quizzes** **Computer Science – Programming** • To explain how selection is used in computer programs by recalling how conditions are used in selection. • To identify conditions in a program and explain that a condition can only be true or false. • To modify a condition in a program. • To relate that a conditional statement connects a condition to an outcome. • To use selection in an infinite loop to check a condition. • To identify the condition and outcomes in a 'if… then… else…' statement. • To relate that a count-controlled loop contains a condition. • To compare a count-controlled loop with a condition-controlled loop. • To explain that a condition-controlled loop will stop when a condition is met • To create a condition-controlled loop. • To explain that when a condition is met a loop will complete a cycle before it stops. • To create a program that uses selection to produce different outcomes. • To explain how selection directs the flow of a program. • To explain that selection can be used to branch the flow of a program. • To explain that a loop can be used to repeatedly check	**Creating Media: Video Production** **Digital Literacy – Multimedia Sounds & Motion** • To explain that a video is a visual media format. • To recognise which devises can and can't record video. • To identify the features of videos. • To use a digital devise to record a video. • To use the microphone to record sound. • To experiment with different camera angles: close-up, mid-range, long shot, moving subject, side by side, high angle, low angle, normal angle • To capture a video using a range of techniques for a given purpose: static camera, zoom, pan, tilt. • To create a storyboard to outline the scenes of a video and the filming techniques. • To create and save video content. • To recognise the need to regularly review and reflect on a video project. • To identify that a video can be improved through reshooting and editing. • In iMovie, select the correct tools to edit my movie. • To add a voice over and edit sound clips (volume, pitch, fade, effect). • To use split, trim and crop to edit a video. • To export a video in order to share it.	**Data and Information: Flat-File Databases** **Understanding Technology** - To explain what a database is and that a computer program can be used to organise data. - To explain what a field and a record is in a database. - To navigate a flat-file database to compare different views of information. - To choose which field to sort data by to view data to answer a given question. - To outline how operands can be used to filter data. - To combine grouping and sorting to answer specific questions. - To outline how 'AND' and 'OR' can be used to refine data selection. **Digital Literacy – Handling Data** - To explain that computer programs can be used to compare data visually - To select an appropriate chart to visually compare data. - To refine a chart by selecting a particular filter. - To explain the benefits of using a computer to create charts. - To choose suitable ways to present information and to understand that we present information to communicate a message. - To use a real-word database to answer questions.

	- To recognise trustworthy websites.		• To make the micro:bit show different pictures on the LED display output depending on which button input is pressed. • To explain that inputs are data sent to a computer. • To explain that outputs are data sent from a computer. • To explain that accelerometer is a sensor, an input that senses movement. • To explain that variables are containers for storing data which can be accessed and updated. **Digital Literacy – Multimedia Sounds** Music Tech unit. See Music progression grid. **Online Safety: SAFER INTERNET DAY** Review of Online Safety & yearly Internet Safety theme.	whether a condition has been met • To design the flow of a program that contains 'if… then… else…' • To use 'if… then… else…' to switch program flow in one of two ways. • To show that a condition can direct program flow in one of two ways. • To design a program that uses selection and identify the outcome of user input in an algorithm. • To create a program that uses selection by implementing an algorithm. • To evaluate and identify ways a program can be improved. • To identify the setup coded needed in a program. **Digital Literacy – Multimedia Text & Images** • To organise and reorganise text on screen to suit a purpose.	**Online Safety** • To know what to do if I see any content online that makes me feel uncomfortable.	
Vocabulary	**system, connection, digital, input, process, output, search, search engine, refine, websites, trustworthy websites, www (world wide web), address bar (omnibox), Sir Tim Berners-Lee (invented the WWW), browser, index, web crawler, data centre, bot, key word, ordering, ranking, links, algorithm, search engine optimisation (SEO), searching, content creator, selection, ranking**	**digital footprint, online identity, online reputation, data, privacy settings, personal data, scam, fake profile, phishing, block, report, influence, community, social media**	**Micro:bit, MakeCode, USB cable, battery pack, algorithm, code, toolbox, code blocks, workspace (assemble the code), hardware, LED, loops, output, program, software, string, simulator (test the code), download, animation, icon, infinite loops, pause, sequence, data, input, selection, accelerometer, sensor, sensor input, variable**	**selection, condition, true, false, count-controlled loop, Scratch programming, program, block, modifying conditions, action, sprite, infinite loop, outcomes, conditional statement (the linking together of a condition and outcomes), algorithm, program, debug, structure: 'if… then… else…', forever loop, question, answer, input, output, task, design, outcomes, levels of abstraction, implement, test, run**	**Video, audio, camera, talking head, panning, close-up, age-appropriate, age ratings, suitable, Video camera, microphone, lens, close-up, mid-range, long shot, moving subject, side by side, high angle, low angle, normal angle, static camera, zoom, pan, tilt, storyboard, filming, review, import, save, split, trim, clip, edit, reshoot, delete, trim, reorder, export, evaluate, share**	**database, data, information, record, field, sort, order, group, flat-file database, value, search, criteria, 'AND' and 'OR' searches, graph, chart, axis, compare, filter, presentation**

Year Six

Autumn Term

Spring Term

Summer Term

On a weekly basis, we retrieve Online Safety knowledge and experiences.

Knowledge & Skills

Understanding Technology

Computer Science – Programming

Digital Literacy – Multimedia Text & Images

Digital Literacy – Multimedia Sounds & Motion

Digital Literacy – Handling Data

Online Safety

Systems and Networks

Understanding Technology

- To recognise that data is transferred across networks using agreed protocols (methods).
- To explain that internet devices have address (IP addresses) and that a Domain Name Server (DNS) translates web address into IP addresses.
- To recognise that connections between computers allow access to shared stored files
- To explain that data is transferred in packets over the internet and identify the main parts of a data packet.
- To recognise computers connected to the internet allow people in different places to work together by allowing the sharing of media.
- To discuss the opportunities that technology offers for communication and collaboration and online methods to do this.
- To choose, compare and evaluate methods of internet communication and collaboration for given purposes
- To explain which types of media can be shared through the internet

Online Safety

- Know that information online can be influenced by algorithms and ranking systems.
- Know that organisations collect and use personal data for different purposes.
- Know how phishing, scams and misinformation are designed to influence users.
- Know the impact that technology can have on health and wellbeing.
- Know that digital reputations can affect future opportunities.
- Know that online information should be critically evaluated before being trusted.
- Evaluate the reliability and accuracy of online information.
- Compare information from multiple sources.
- Critically assess the impact of algorithms and targeted content.
- Apply strategies to manage online wellbeing and screen time.
- Identify and respond appropriately to phishing, scams and manipulation.
- Manage and protect their digital reputation responsibly.

Programming A - Variables in Games

Computer Science – Programming

- To define a 'variable' as something that is changeable.
- To identify examples of variables and that variables can hold numbers (integers) or letters (strings) e.g. a football score during a match.
- To explain why a variable is used in a program e.g. score.
- To identify a program variable as a placeholder in memory for a single value and that it has a name and value.
- To choose how to improve a game by using variables: where in a programme to change a variable; make use of an event in a program to set a variable and recognise that the value of a variable can be used by a program.
- To design a project that builds on a given example: creating an algorithm and make design choices.
- To test the code that has been written.
- To identify ways that their game can be improved.

Online Safety: SAFER INTERNET DAY

Review of Online Safety & yearly Internet Safety theme.

Data and Information: Introduction to Spreadsheets

Digital Literacy – Handling Data

- To create a data set in a spreadsheet by suggesting how to structure my data.
- To build a data set in a spreadsheet: I can explain what an item of data is; choose and apply an appropriate format for a cell.
- To explain that formulars can be used to produce calculated data and construct a formular in a spreadsheet.
- To apply formulars to data using different operations.
- To create a formular which includes a range of cells and apply it to multiple cells by duplicating it.
- To create a spreadsheet to plan an event: explaining how it should be organises and apply formular to calculate the data.
- To present data by producing a chart to show the answer to a question.
- To suggest when to use a table or chart.

Creating Media: Webpage Creation

Understanding Technology

- To explore and review existing websites and evaluate their content to be able to recognise common features on a webpage.
- To recognise that a website is a set of hyperlinked webpages.
- To discuss the different types of media used on websites and that webpages can contain different media types.
- To understand that websites are created by using HTML code which are written by people.
- To explain what a navigation path is and why they are useful.
- To recognise the need for a navigation path to make multiple webpages and link them using hyperlinks.

Digital Literacy – Multimedia Text & Images

- To design a webpage, taking on the role of a web designer, by drawing out a layout which suits the purpose and includes common features and suggesting media to include.
- To understand why copyright-free images should be used and be able to source these.
- To describe what is meant by the term 'fair use'.
- Using Google Sites and their plan, create their own webpage which includes common features, uses text, sets a style of text and embeds copyright-free media.
- To preview what their webpage looks like on different devices (iPad and laptop – different screen sizes) and suggest/make edits.
- To evaluate the user experience of a website.

Online Safety

- To explain the implications of linking content owned by other people and create hyperlinks on their own websites that link to other people's work.

Vocabulary

Systems and Networks
Communication, transfer, protocol (methods), data, web address, Internet Protocol, IP address, Domain Name Server (DNS), networks, data packet, header, data payload, messages (text), other types of data – images, video and audio, shared files, stored online, chat, slide deck, collaborate, collaboration, re-use, remix, Scratch, communication, public, private, one-way, two-way, one-to-one, one-to-many, safe communication, safe content, unsafe, report.

Online Safety
algorithm, misinformation, disinformation, phishing, scam, targeted content, digital reputation, wellbeing, screen time, personal data, data collection, bias, verification, manipulate, credibility

Programming A - Variables in Games
Variable, change, name, value, set, program, Scratch, motion block, event block, variable block, design, event, score, algorithm, code, sprite, background, artwork, reset, operators, modify, project, test, debug, task, running the code, improve, evaluate, share.

Data and Information: Introduction to Spreadsheets
Data, spreadsheets, collect, organise, construct, data sets, cells, apply, formular, input, output, data types, duplication, functions, budget, quantity, subtotal, format, present, column chart, bar chart, chart, pie chart, line graph.

Creating Media: Webpage Creation
Browser, address bar, tabs, website, webpage, HTML (Hyper Markup Language), purpose, layout, header, menus, navigation bars, home page, media, text, text style, text size, logo, website designer, copyright, copyright-free images, ownership, fair use, embed, Google Sites, preview, device, screen size, navigation path, breadcrumb trail, navigation, hyperlink, subpage, external link, embed.