# WAT Computing Substantive and Disciplinary Knowledge

## National Curriculum Coverage

| Year/Theme | Online Safety | Presentation | Artificial Intelligence | Coding | Robotics | Networks and Data |
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| KS1 | 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. | Use technology purposefully to create, organise, store, manipulate and retrieve digital content. | Use logical reasoning to predict the behaviour of simple programs. | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.<br><br>Create and debug simple programs. | | Recognise common uses of information technology beyond school. |
| KS2 | Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | Select, use and combine a variety of software (including internet services) on a arrange 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.<br><br>Us sequence, selection, and repetition in programs; work with variables and various forms of input and output.<br><br>Use logical reasoning to explain how some simple algorithms work and 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. |

## Thematic Model – Years 1 - 6

| Year/Theme | Online Safety | Presentation | Artificial Intelligence | Coding | Robotics | Networks and Data |
|---|---|---|---|---|---|---|
| 1 | Myself online | Camera and Keynote | AI Introduction | Unplugged Coding | Bee-Bot | Networks and Data Basics |
| 2 | Safe sites and passwords | Creating a document | AI research | Introduction to Coding | Code & Go Mouse | Introduction to Digital Networks |
| 3 | PII | iMovie and Green Screen | AI assistant | Swift Playgrounds 1 | Osmo | Building Networks Knowledge |
| 4 | Scamming and phishing | Designing a presentation and App Mock Up | Text to image | Swift Playgrounds 2 | Sphero | Deepening Networks and Data Understanding |
| 5 | Social Media | Spreadsheets and functions | AI in Conversation | HTML Functions | Micro:bit | Advanced Networks and Data Concepts |
| 6 | Fake News | Building a website | Coding Scripts | HTML Advanced | Micro:bit 2 | Mastering Networks and Data |

# EYFS Introduction to Themes Through the Curriculum

| Area/Theme | Online Safety | Presentation | Artificial Intelligence | Coding | Robotics | Networks and Data |
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| Literacy | Use storybooks/interactive e-books to teach children about online safety. Discuss the importance of not sharing personal information online. | Encourage children to create simple digital storybooks or presentations using apps like Book Creator, where they can draw pictures, type text, and record their voices to tell a story. | Have children ask questions to a voice assistant (like Siri) and see how it responds. Discuss how the AI understands and answers their questions. | Re-tell stories by ordering digital images into the correct sequence. | | |
| Maths | Use educational apps that incorporate online safety tips as part of the game or activity, reinforcing safe online behaviour. | Use interactive apps to create and present simple math problems and solutions. Children can practice counting, adding, and subtracting using digital tools. | Introduce simple AI-powered maths games that adapt to the child's skill level, providing personalised learning experiences. (1Minute Maths) | Use apps like Busy Things that offer math-based coding activities where children can sequence commands to solve problems or create patterns. | | |
| C & L | Role-play scenarios using puppets or toys to teach children about safe and respectful online communication. | Use apps like Puppet Pals to create and present digital puppet shows, enhancing storytelling and language skills. | Have children interact with language learning apps that use AI to provide instant feedback on pronunciation and vocabulary. | Use voice-activated toys that require children to give verbal instructions, helping them understand the basics of giving commands and following sequences. | | |
| PSED | Use age-appropriate videos and discussion activities to teach children about the importance of being kind and respectful online. | Encourage children to create digital posters about themselves, their families, and their interests using simple presentation apps. | Use AI-powered emotion recognition apps that help children identify and express their feelings, fostering emotional intelligence. | | Use programmable robots (like Bee-Bots) to work on teamwork and cooperation, where children take turns programming the robot to complete tasks. | |
| PD | Teach children the importance of taking breaks from screen time and encourage physical activities alongside digital learning. | Use motion-based apps that combine physical activity with learning, such as apps that require children to move and interact with the screen. | | | Use remote control cars and wind-up toys to develop fine motor skills and hand-eye coordination. Children can create obstacle courses and guide the toys through them. | |
| EAD | Use digital art apps to create posters or artwork about online safety messages. | Encourage children to create digital portfolios of their artwork using presentation tools. They can take photos of their physical creations and add digital elements. | Use AI art apps that allow children to create artwork with the help of AI, exploring how technology can enhance creativity. | Use apps that combine coding with music creation, allowing children to compose simple tunes by sequencing commands. | Explore colours using robots that interact based on chosen colour such as Sphero Indie Cars. | |
| UtW | Use interactive story apps that incorporate online safety themes, helping children understand the digital world. | Use apps like Google Earth to explore different parts of the world and create digital presentations about different cultures and places. | Introduce simple AI applications that help children learn about weather patterns, animals, or other scientific concepts. | | | Use simple explanations and interactive activities to show how devices connect and communicate, such as showing how an iPad connects to the internet to find information. |

# Substantive and Disciplinary Knowledge Progression by Theme – Years 1 - 6

| Online Safety | | |
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| **Year** | **Unit** | |
| 1 | Myself online | <ul><li>Know devices that use the internet.</li><li>Know the logos and interfaces of different browsers.</li><li>Understand the importance of using a child friendly safe browser.</li><li>Know what the internet can be used for and some dos and don'ts.</li><li>Understand the importance of being supervised by an adult when online.</li><li>Know what to do if they see something they don't like on the internet.</li></ul> |
| 2 | Safe sites and passwords | <ul><li>Understand why they should not share passwords.</li><li>Understand what makes a safe website and about clicking on suspicious links.</li><li>Know not to share personal information.</li><li>Understand about permissions for sharing photos and information.</li><li>Know some information on the internet is not true, and that some people are not real.</li></ul> |
| 3 | PII | <ul><li>Understand what constitutes PII.</li><li>Know what geotagging is.</li><li>Understand ways in which people try to obtain PII.</li><li>Identify genuine and false reasons for sharing PII.</li><li>Know how to accept and editing privacy settings on websites.</li></ul> |
| 4 | Scamming and phishing | <ul><li>Understand the terms phishing and scamming.</li><li>Know the term cyber security and be able to define it.</li><li>Identify ways to spot fake emails and links.</li><li>Know how to prevent common cyber threats.</li><li>Know actions to take if they believe they are being scammed.</li></ul> |
| 5 | Social Media | <ul><li>Know about current popular social media sites.</li><li>Identify positive uses of social media.</li><li>Identify negative uses of social media.</li><li>Understand the importance of their digital footprint.</li><li>Know the age limits and laws surrounding social media.</li><li>Understand about privacy settings and reporting.</li></ul> |
| 6 | Fake News | <ul><li>Understand why people may generate false information online.</li><li>Know how to identify reliable sources and check accuracy of information.</li><li>Know how to identify AI generated or manipulated content.</li></ul> |

| Presentation | | |
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| **Year** | **Unit** | |
| 1 | Camera and Keynote | <ul><li>Know the basic features of the camera app.</li><li>Can use tools such as mark up to explore image editing.</li><li>Know how to save and delete photographs.</li><li>Demonstrate the basic features of Keynote.</li><li>Able to add images and texts to a presentation.</li></ul> |
| 2 | Creating a document | <ul><li>Know that there are different uses of a word processor.</li></ul> |

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| | | • Navigate the basic features of a word processor.<br>• Know how to save and retrieve a document.<br>• Understand the purpose of collaborative documents.<br>• Create their own document. |
| 3 | iMovie and Green Screen | • Can use basic features and functions of iMovie and create a new project with a title and credits.<br>• Able to import and organize video clips, images, and audio into their iMovie project and use the timeline to edit and arrange their media.<br>• Know how to apply transitions, effects, filters, and animations to their iMovie project and adjust the volume, speed, and duration of their media.<br>• Confident to set up and use a green screen and create some footage.<br>• Demonstrate how to import their green screen footage into iMovie and use the chroma key feature to replace the green background with a different image or video.<br>• Export and share their iMovie project with their classmates and teacher and reflect on their learning process and provide feedback to others. |
| 4 | Designing a presentation and App Mock Up | • Explain what a mock up is and why it is useful for app development and identify the main elements of an app interface such as buttons, icons, menus, text fields, etc.<br>• Can use Keynote to create a blank slide and add shapes, images, and text to their slide. Resize, rotate, and align their objects on the slide.<br>• Can use Keynote to create multiple slides and link them together with hyperlinks or buttons. Apply transitions and animations to their slides and objects.<br>• Can use Keynote to create a mock-up of an app based on their own idea or a given theme. Test and refine their mock up by using the play mode or previewing it on an iPad.<br>• Can use Keynote to create a presentation that showcases their app mock up and explains its features, benefits, and target audience. Apply design principles such as contrast, alignment, repetition, and proximity to their presentation.<br>• Know how to present their app mock up and presentation to their classmates and teacher and receive and give feedback on their work. Evaluate areas of their learning process and identify areas for improvement |
| 5 | Spreadsheets and functions | • Identify the main components of the Numbers user interface such as the toolbar, the sidebar, the sheets, and the tables. Create a new spreadsheet and rename it.<br>• Able to enter text and numbers in table cells and format them using options such as font, size, colour, alignment, and borders. Resize, move, and merge cells and add or delete rows and columns.<br>• Demonstrate the use basic functions such as sum, average, count, min, max, and if to perform calculations on table data. Use cell references and copy and paste formulas.<br>• Know how to select data to make a chart from a table. Can choose from different types of charts such as column, bar, line, pie, donut, and scatter.<br>• Customise their charts by changing the title, legend, labels, axes, gridlines, colours, and styles. Move and resize their charts and add or delete data series.<br>• Interpret their charts by identifying patterns, trends, outliers, and relationships in their data. Able to present their charts to their classmates and teacher and explain their findings. |
| 6 | Building a website | • Explain what a website is and why it is important for promoting their school. Identify the main components of a website such as the header, the footer, the navigation bar, the content area, and the links.<br>• Can use Keynote to create a home page for their website. Add a title, a logo, a slogan, and a background image to their home page using shapes, images, and text.<br>• Can use Keynote to create additional pages for their website. Add relevant information and images to their pages such as the school history, the curriculum, the facilities, the staff, the achievements, and the contact details.<br>• Can use Keynote to create a navigation bar for their website. Add buttons and hyperlinks to their navigation bar that link to their other pages.<br>• Can use Keynote to create a footer for their website. Add social media icons and links to their footer that connect to their school's Facebook, Twitter and Instagram accounts.<br>• Export their website as an HTML file and upload their website to a free web hosting service such as Google Sites. |

| Artificial Intelligence | | |
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| Year | Unit | |
| 1 | AI Introduction | • Know what AI is and identify some examples of AI in their daily life, such as voice assistants, face recognition, or online games.<br>• Know how AI works and distinguish between different types of AI, such as supervised, unsupervised, and reinforcement learning. |

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| | | • Identify some of the benefits and challenges of AI, such as how it can help solve problems, improve lives, or create new opportunities, but also how it can raise ethical, social, or environmental issues.<br>• Understand how to use a visual programming tool, such as Machine Learning for Kids, to create and train their own AI models using data and blocks.<br>• Demonstrate how to test and evaluate their AI models by running them on different inputs and outputs and checking their accuracy and performance.<br>• Know how to modify and improve their AI models by adding or changing data, blocks, or parameters and observing the effects on their results. |
| 2 | AI research | • Identify ways to use AI to generate information, such as text, images, or music, using online tools, such as experiments with Google2 or Magenta.js demos3.<br>• Know how to compare and contrast the information generated by AI with the information created by humans and identify the similarities and differences.<br>• Understand limitations and biases of AI by analysing and critiquing AI generated information.<br>• Demonstrate application of their AI skills by creating their own information products, such as stories, poems, artworks, or songs, using online tools or their own AI models.<br>• Know how to use AI as a personal assistant to complete tasks, such as searching for information, scheduling events, setting reminders, or making reservations, using online tools or devices, such as Bing4, Cortana5, or Microsoft To Do. |
| 3 | AI assistant | • Demonstrate ways to communicate with AI assistants using natural language, such as speech or text, and understand how they process and respond to their requests.<br>• Know how to customise their AI assistants by changing their settings, preferences, or features and observe how they adapt to their needs and preferences.<br>• Identify the benefits and risks of AI assistants by evaluating the usefulness and reliability of them.<br>• Demonstrate their AI skills to create their own personal assistant projects, such as a chatbot, a game character, or a smart device, using online tools or their own AI models.<br>• Demonstrate their understanding of what they learned in the previous lessons and by completing a quiz or a project. They will also reflect on their own online behaviour and habits and set some goals for using AI responsibly and respectfully. |
| 4 | Text to image | • Define what AI is and identify some examples of AI in their daily life, such as voice assistants, face recognition, or online games.<br>• Explain how AI can generate images from text descriptions using natural language processing and computer vision techniques.<br>• Can use an online tool, such as DALL·E 2, to generate images from text descriptions and observe how the tool interprets and visualises their words.<br>• Know how to compare and contrast the images generated by AI with the images they imagined or drew themselves and identify the similarities and differences.<br>• Demonstrate an ability to analyse and critique the images generated by AI and understand their limitations and biases.<br>• Can apply their AI skills to create their own creative writing products, such as stories, poems, or comics, using the images generated by AI as inspiration or illustration. |
| 5 | AI in Conversation | • Demonstrate an understanding of  AI communication: Pupils will understand how AI can be used to communicate and interact with humans through conversation.<br>• Can identify conversational AI examples: Pupils will identify examples of conversational AI in daily life, such as chatbots and voice assistants.<br>• Know how to create simple chatbots: Pupils will use online tools to create simple chatbots that can respond to user inputs.<br>• Be able to analyse AI responses: Pupils will analyse the responses generated by their chatbots, understanding the strengths and limitations of conversational AI.<br>• Know how to improve chatbot responses: Pupils will modify and improve their chatbots by adding more responses and refining existing ones.<br>• Be able to discuss the ethical considerations of using AI in conversations, such as privacy and bias. |
| 6 | Coding Scripts | • Understand AI-assisted coding: Pupils will understand how AI can assist in writing and generating script code.<br>• Can identify AI coding tools: Pupils will identify and explore various AI tools that can help generate script code.<br>• Be able to generate simple code snippets: Pupils will use AI tools to generate simple code snippets and understand the generated code.<br>• Know how to modify AI-generated code: Pupils will learn how to modify and enhance AI-generated code to fit their specific needs.<br>• Demonstrate an ability to create a Project with AI Assistance: Pupils will apply AI-assisted coding to create a small project, such as a game or a webpage.<br>• Can discuss the benefits and limitations of using AI to generate code and reflect on their learning process. |

| Coding | | |
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| **Year** | **Unit** | |
| 1 | Unplugged Coding | • Know and describe the basic elements of coding, such as commands, sequences, loops, and events, using everyday examples and actions.<br>• Demonstrate simple commands and sequences using paper cards with symbols or words, such as move forward, turn left, turn right, etc. They will use the cards to instruct a partner or a toy robot to move around a grid or a map.<br>• Demonstrate how to use loops and events to make their commands and sequences more efficient and interactive, such as making a partner or a toy robot repeat an action or respond to a signal, such as a clap or a whistle.<br>• Demonstrate their coding skills to create a simple board game, such as making a character move along a path, collect items, or avoid obstacles, using dice, cards, tokens, etc.<br>• Know how to debug their code by finding and fixing errors, such as missing cards, incorrect order, or wrong directions.<br>• Know how to share their code with others and give and receive feedback on their work, such as commenting on what they liked, what they learned, or what they would improve. |
| 2 | Introduction to Coding | • Understand basic coding concepts: Pupils will understand the basic concepts of coding, including commands and sequences.<br>• Recognise coding symbols and blocks: Pupils will recognize basic coding symbols and blocks used in visual programming languages.<br>• Know how to create simple sequences: Pupils will create simple sequences of commands to achieve a specific outcome.<br>• Demonstrate how to debug simple programs: Pupils will learn to identify and fix errors (bugs) in simple programs.<br>• Know how to use loops in coding: Pupils will understand and use loops to repeat actions in their programs.<br>• Demonstrate how to create a simple animated story: Pupils will apply their coding skills to create a simple animated story using a visual programming tool. |
| 3 | Swift Playgrounds 1 | • Know how to use the Swift Playgrounds app and use different tools and buttons to create and modify characters and backgrounds.<br>• Demonstrate how to add and delete blocks from the programming area and understand how each block affects the character's behaviour.<br>• Understand how to combine multiple blocks to create a sequence of actions for their character and test their code by pressing the green flag button.<br>• Demonstrate how to use the speed block to change the speed of their character's movement and compare the effects of different speed values.<br>• Demonstrate how to use the repeat block to make their character perform an action multiple times and experiment with different numbers of repetitions.<br>• Know how to use the message block to make their character send or receive a signal from another character and create a simple interaction between two or more characters. |
| 4 | Swift Playgrounds 2 | • Understand the concepts and skills they learned in the previous year's Swift unit lessons and demonstrate their understanding by completing a Socrative quiz.<br>• Demonstrate how to use the sound block to add sounds or music to their character's actions and explore how sounds can enhance their code.<br>• Demonstrate how to use the wait block to control the timing of their character's actions and experiment with different durations of waiting.<br>• Demonstrate how to use the if block to make their character perform different actions based on a condition and understand how conditional logic works in coding.<br>• Demonstrate how to use the random block to generate random numbers or choices for their character's actions and discover how randomness can make their code more fun and unpredictable.<br>• Know how their coding skills to create a final project, such as an animation, a story, or a game, using all the blocks they learned. |
| 5 | HTML Functions | • Know how to use the Koder app interface and use different tools and buttons to create and modify HTML files.<br>• Understand how to add and delete HTML tags from the code editor and understand how each tag affects the web page content.<br>• Demonstrate how to combine multiple HTML tags to create a basic web page structure with headings, paragraphs, lists, images, and links.<br>• Demonstrate how to use the style attribute to change the appearance of HTML elements, such as color (**NB not colour**), font, size, alignment, etc.<br>• Know how to use the class and id attributes to assign names to HTML elements and apply CSS rules to style them. |

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| | | • Know how to use the div and span tags to create containers for HTML elements and arrange them using CSS properties, such as display, position, margin, padding, etc. |
| 6 | HTML Advanced | • Review the concepts and skills they learned in the previous HTML unit and demonstrate their understanding by completing a Socrative quiz.<br>• Know how to use the table tag to create a data table with rows, columns, headers, and captions and style it using CSS properties, such as border, background, etc.<br>• Demonstrate how to use the form tag to create a web form with different input types, such as text, email, password, checkbox, radio, etc. and add labels, placeholders, and buttons to it.<br>• Demonstrate how to use the audio and video tags to embed multimedia content into their web pages and control their playback using attributes, such as autoplay, loop, muted, etc.<br>• Understand how to apply their HTML coding skills to create a web page about their current wider curriculum topic.<br>• Demonstrate how to share their web page with others and give and receive feedback on their work, such as commenting on what they liked, what they learned, or what they would improve. |

| Robotics | | |
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| Year | Unit | |
| 1 | Bee-Bot | • Recognise and name the buttons and symbols on the Bee-Bot and press them to make the Bee-Bot move forward, backward, left, and right.<br>• Plan and enter a sequence of commands for the Bee-Bot to follow and clear the memory when they want to start a new sequence.<br>• Know how to use a grid mat to guide the Bee-Bot's movements and estimate and measure the distance that the Bee-Bot travels in each step.<br>• Know how to use directional language such as up, down, left, right, clockwise, and anticlockwise to describe the Bee-Bot's movements and give and follow instructions to move the Bee-Bot from one place to another on the grid mat.<br>• Debug sequences by checking for errors and correcting them and test their sequences by running them on the Bee-Bot and observing the results.<br>• Create their own challenges for themselves and others by setting a starting point and an ending point for the Bee-Bot on the grid mat and solve their challenges by creating and testing sequences. |
| 2 | Code and Go Robot Mouse | • Recognise and name the buttons and symbols on the Code & Go Robot Mouse and press them to make the mouse move forward, backward, left, and right.<br>• Plan and enter a sequence of commands for the Code & Go Robot Mouse to follow and clear the memory when they want to start a new sequence.<br>• Know how to use a grid mat to guide the Code & Go Robot Mouse's movements and estimate and measure the distance that the mouse travels in each step.<br>• Know how to use directional language such as up, down, left, right, clockwise, and anticlockwise to describe the Code & Go Robot Mouse's movements and give and follow instructions to move the mouse from one place to another on the grid mat.<br>• Debug sequences by checking for errors and correcting them and test their sequences by running them on the Code & Go Robot Mouse and observing the results.<br>• Create their own challenges for themselves and others by setting a starting point and an ending point for the Code & Go Robot Mouse on the grid mat and solve their challenges by creating and testing sequences. |
| 3 | Osmo Coding Awbie | • Know how to use the Osmo base and reflector to set up their iPad and launch the Osmo Coding Awbie app.<br>• Recognise and name the different coding blocks that control Awbie's movements and actions and connect them together to form a sequence of commands.<br>• Know how to use the play button to execute their commands and observe how Awbie responds on the screen. Clear the memory to start a new sequence of commands.<br>• Know how to use quantifiers to specify how many times Awbie should perform an action and use repeats to create loops that repeat a set of commands.<br>• Know how to use subroutines to save and reuse a sequence of commands and use magic to make Awbie do something special.<br>• Complete different levels and challenges in the game by collecting strawberries, finding pets, solving puzzles, and building campsites. Know how to debug their sequences by finding and fixing errors. |
| 4 | Sphero | • Connect and control their Sphero ball using the Sphero Play app and explore different drive modes such as joystick, tilt, slingshot, and block drive.<br>• Know how to use the Sphero Edu app to program their Sphero ball using draw, block, or text coding and run their programs on their robot.<br>• Know how to use the sensors and LED lights on their Sphero ball to create interactive programs that respond to different inputs and outputs.<br>• Know how to use variables and operators to store and manipulate data in their programs and use logic and loops to control the flow of their programs.<br>• Know how to use functions and events to organize and reuse their code and use comments and documentation to explain their code. |

| | | • Complete various challenges and activities that test their coding skills and creativity with their Sphero ball. Share their programs with others and give and receive feedback on their work. |
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| 5 | Micro:bit | • Identify the main features and components of the micro:bit such as the LED matrix, the buttons, the pins, the sensors, and the battery holder.<br>• Connect their micro:bit to a computer or a tablet and use the MakeCode editor to create and download their first program using blocks or JavaScript.<br>• Know how to use the LED matrix to display text, numbers, images, and animations on their micro:bit and use the buttons to control their program.<br>• Know how to use the sensors on their micro:bit to detect light, temperature, motion, and direction and use conditional statements and variables to make their program react to different inputs.<br>• Know how to use the pins on their micro:bit to connect external components such as LEDs, buzzers, motors, and sensors and use loops and functions to control them.<br>• Know how to use the radio feature on their micro:bit to communicate with other micro:bits and create interactive games or projects that involve wireless data transmission. |
| 6 | Micro:bit 2 | • Review and use sensors.<br>• Know how to do data logging.<br>• Understand advanced LED Matrix programming.<br>• Know how to use external components.<br>• Able to create simple functions.<br>• Understand basic communication with radio features. |

| Networks and Data | | |
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| **Year** | **Unit** | **Info: during this unit, Pupils will -** |
| 1 | Networks and Data Basics | • Understand basic communication: Pupils will understand how people communicate using simple messages.<br>• Identify simple devices: Pupils will identify basic communication devices like telephones and computers.<br>• Recognise digital devices: Pupils will recognise digital devices used for communication and data sharing.<br>• Understand simple networks: Pupils will understand the concept of a simple network, such as how a computer connects to a printer.<br>• Know about data: Pupils will know what data is and how it can be simple information like names and numbers.<br>• Understand basic data sharing: Pupils will understand how data can be shared between devices, such as sending a picture from a tablet to a computer. |
| 2 | Introduction to Digital Networks | • Identify network components: Pupils will identify basic components of a network, such as computers, servers, and routers.<br>• Understand data transmission: Pupils will understand the basics of how data is transmitted over a network.<br>• Know types of data: Pupils will know different types of data (text, images, audio) and how they are used.<br>• Understand about internet safety: Pupils will understand basic principles of staying safe on the internet.<br>• Understand the role of Wi-Fi: Pupils will understand what Wi-Fi is and how it connects devices wirelessly to a network. |
| 3 | Building Networks Knowledge | • Know about more complex networks: Pupils will know about more complex networks, such as home networks with multiple devices.<br>• Understand internet vs. intranet: Pupils will understand the difference between the internet and an intranet.<br>• Know about data packets: Pupils will learn how data is broken down into packets to be sent over a network.<br>• Understand network protocols: Pupils will understand the basics of network protocols like HTTP and HTTPS.<br>• Understand the importance of cybersecurity: Pupils will understand the basic importance of cybersecurity in protecting data. |
| 4 | Deepening Networks and Data Understanding | • Understand IP addresses: Pupils will learn what an IP address is and why it is important in a network.<br>• Understand data encryption: Pupils will understand the basics of data encryption and why it is important.<br>• Know about data storage: Pupils will know different ways data can be stored, including cloud storage.<br>• Understand network traffic: Pupils will understand the concept of network traffic and how data travels over a network.<br>• Understand the role of servers: Pupils will understand servers and how they manage data and resources on a network. |
| 5 | Advanced Networks and Data Concepts | • Understand data compression: Pupils will learn about data compression and why it is used.<br>• Know about the Internet of Things (IoT): Pupils will understand the concept of IoT and how everyday objects can connect to networks.<br>• Know about data analytics: Pupils will know the basics of data analytics and how data is used to make decisions.<br>• Understand network topologies: Pupils will understand about different network topologies (e.g., star, mesh, ring) and their uses. |

| | | • Understand ethical data use: Pupils will understand ethical considerations in data use, including privacy and consent. |
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| 6 | Mastering Networks and Data | • Understand cloud computing: Pupils will understand about cloud computing and how it allows for scalable data storage and processing.<br>• Understand data security measures: Pupils will understand about various data security measures, such as firewalls and antivirus software.<br>• Know about network administration: Pupils will know the basics of network administration and the role of network administrators.<br>• Identify Big Data: Pupils will know about big data and identify how large sets of data are managed and analysed. |