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| **EYFS Cycle 1** | | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | | **All About Me**  **Autumn** | **Light and Dark**  **Christmas**  **Diwali** | **Superheroes**  **Winter**  **Chinese New Year** | **Traditional Tales**  **Spring** | **Holidays**  **Summer** | **Growing** |
| **Computational Thinking** | **Barefoot Unit** | **Our Bodies** | **Scarves for Snowmen** | **Let’s Make an Igloo** | **Springtime** |  |  |
| **Key Questions** | | | | | | |
| **Logical Reasoning** |  | Tell me about your work Which pictures are the same / repeated? Why did you put that there? What would come next? I wonder what would happen if… What have you found out? How do you know that? | How are you going to make your igloo? Which material will you use? Why? What have you found out? How do you know that? Try it. Have a go. What do you think (predict) will happen? What happened? Did that surprise you? Why? Will this stay up? Why? Why not |  |  |  |
| **Abstratction** | What do you need to include? Which parts of the body are important? Why do / don’t you need that? What is it that makes a body, a body? Why did you choose to include...? |  |  | What is the same about all the scarecrows? What is different about them? Which ones do you think look the best? Why? What colours are they wearing? Is the size / clothes colour important? What are you going to include in your scarecrow picture? Why? |  |  |
| **Pattern** |  | What do you notice about these pictures? Which objects are the same? Which objects are different? Which object is first? What do we need next? How do we know? How can we check if it is correct? |  |  |  |  |
| **Algorithms** | What shall I do first? What shall I add next? What shall I use for this? What else do I need to add? Does that all look correct? |  |  | I wonder which one comes first What are you going to do first/ next? Why? Which part comes next? Which part comes at the end? How do you know? |  |  |
| **Decomposition** |  | What do we need? What shall we make first? What are you going to do next? Why |  |  |  |
|  | **Debugging** | Can you test your dance with a friend? Is it easy to follow? What is tricky with the dance? Could you make it easier to follow? What if you tried this? What do you like? What could you improve? |  |  |  |  |  |

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| **EYFS Cycle 2** | | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | | **Travel and Transport**  **Autumn** | **Pets**  **Christmas**  **Diwali** | **People who help us**  **Winter**  **Chinese New Year** | **Fantasy and adventure**  **Spring** | **Recycling and the environment**  **Summer** | **Dinosaurs** |
| **Computational Thinking** | **Barefoot Unit** | **Awesome Autumn** | **Let’s Feed the Birds** |  |  | **Summer Fun** |  |
| **Key Questions** | | | | | | |
| **Logical Reasoning** | Tell me about your work Why did you put that there? I wonder what would happen if… What have you found out? How do you know that? | Tell me about your work. Why did you put that there? I wonder what would happen if… What have you found out? How do you know that? |  |  | Where should we put the….? Can you show me where to draw the ..? I wonder why this might / might not be a good place for ... |  |
| **Abstraction** |  | What do you notice about these pictures? Which objects are repeated? Which object is first? What do we need next? How do we know? Is that the same as… |  |  |  |  |
| **Pattern** | What do you notice about these pictures? Which objects are repeated? Which object is first? What do we need next? How do we know? Is that the same as…? |  |  |  |  |  |
| **Algorithms** | I wonder which one comes first What are you going to do? What are you going to do first/next? Why? Which part comes next? How do you know? | I wonder which one comes first What are you going to do? What are you going to do first/next? Why? Which part comes next? Which part comes at the end? How do you know? |  |  | What did you see first / next / last? Should this one be placed before/ after ... on the map? Where did you go next and how did you get there? What was the last thing you did before you came home from your adventure? |  |
| **Decomposition** | How shall we do this bit? What do we need to do first? Which part shall we do next? |  |  |  |  |

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| **Year 1** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **Getting Started** | **Programming Beebot** | **Algorithms Unplugged** | **Digital Imagery** | **Introduction to Data** | **Rocket to the Moon** |
| **National Curriculum** | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  Recognise common uses of 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. | 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 | 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 explain how some simple algorithms work and to detect and correct errors in algorithms and programs  Recognise common uses of 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. | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  Recognise common uses of technology beyond school | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs |
| **Computational Thinking** |  | Learning how to explore and tinker with hardware to find out how it works. Constructing a series of instructions into a simple algorithm.  Applying computing concepts to real world situation in an unplugged activity. | Understanding how to create algorithms.  Learning that computers need information to be presented in a simple and clear way.  Understanding how to break a computational thinking problem into smaller parts in order to solve it. | Using logical reasoning to predict the behaviour of simple programs. |  |  |
| **Computers and Hardware** | Learning to locate where keys are on the keyboard.  Developing basic mouse skills. |  |  | Using cameras or tablets to take photos. | Recognising uses of technology beyond school. |  |
| **Digital Literacy and Online Safety** | Recognising common uses of information technology. Logging in and saving work on their own account.  Knowing what to do if they have concerns about content or contact online. Understanding of how to create digital art using an online paint tool |  |  | Using technology purposefully to create, organise, store, manipulate and retrieve digital content.  Knowing what to do if they have concerns about con- tent or contact online. | Using technology purposefully to create, organise, store, manipulate and retrieve digital content.  Selecting software appropriately. | Using technology purposefully to create, organise, store, manipulate and retrieve digital content.  Selecting software appropriately. |
| **Key Vocabulary** | Textures  Portrait  Self-portrait  Oval  Elipse  Similarities  Differences  Features  Facial  Shape tool  Fill tool  Background  Fill  Outline  Drag and drop  Right click  Left click  Menu  Bring to the front  Layers  Log in  Login  Log off  Computer  Mouse  Mouse pointer  Click  Keyboard  Screen  Password  Account  Software  Sketchpad  Clipart  Tools  Brushes  Eraser  Predict  Explore  Explain  Drag  Digital Photography  Digital art  Undo  Duplicate  Ctrl  Snap tools | Bee-Bot  Algorithm  Code  Instructions  Video  Demonstration  Filming  Pause  Clear instructions  Precise  Video recording  Explore  Explain  Controller  Judge  Destination  Map Program  Debug  Mistake  Programming  Inputting | Algorithm  Instructions  Computer  Tasks  Order  Specific  Solution  Bug  Virtual  Assistant  Assistance  Input  Output  Devices  Artificial intelligence  Programming  Automatic  Sensor  Decompose  Decomposition  Manageable  Organising  Problem  Chunks  Directions  De-Bug  Code  Correct | Pictorial story  Sequence  Plan  Photo  Pictures  Screen  Camera  Image  Digital  Tablet  Deleting  Device  Editing  Software  Visual effects  Crop  Filter  Import  Online  Keyword  Search engine  Props  Save as  Drag and drop  Internet  Collage  Download  Orientation  Resize  Edit  Storage space | Data  Representation  Map  Information  Objects  Technology  Mouse  Pictogram  Button  Pictures  Click and drag  Label  Resize  Values  Charts  Experiment  Table  Pie chart  Bar chart  Line graph  Block graph  Data collection  Digitally  Tally  Create  Count  Sort  Categorise  Identify  Branching database  Done  Process  Play  Invention  Design | Materials  Digital content  List  Create  Identify  Physical properties  Saved  Share  Graphics  Editing software  Program  Digital image  Folder  Document  Save  Components  Annotate  Design  Instructions  Sequence  Order  Model  Photo  Evaluate  Creation process  Spreadsheet  Data  Input  Cells  Measure  Distances |

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| **Year 2** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **What is a computer?** | **Algorithms and Debugging** | **Word Processing** | **Programming Scratch Jr.** | **Stop Motion** | **International Space Station** |
| **National Curriculum** | Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions  Recognise common uses of technology beyond school | 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 explain how some simple algorithms work and to detect and correct errors in algorithms and programs | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  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. | 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 explain how some simple algorithms work and to detect and correct errors in algorithms and programs  Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  Recognise common uses of technology beyond school | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs |
| **Computational Thinking** | Learning about inputs and outputs and how they are used in algorithms. | Identifying problems with code using both ‘unplugged’ and ‘plugged’ systems to diagnose and correct errors in an algorithm- a process known as ‘debugging’ |  | Using the app ‘ScratchJr’, pupils programme a familiar story and an animation of an animal, make their own musical instruments and follow an algorithm |  | Consider inputs and outputs to understand how sensors work. |
| **Computers and Hardware** | Understanding what a computer is and the role of individual  components. |  |  |  | Understanding how to use tablets or computers to take photos. |  |
| **Digital Literacy and Online Safety** |  |  | Using their developing word processing skills, pupils write simple messages to friends and learn why we must be careful about who we talk to online | Using technology purposefully to create, organise, store, manipulate and retrieve digital content. | Pupils create simple animations, storyboarding their ideas then decomposing it into small parts of action to be captured using stop motion animation software | Using technology to create and label images and to put data into a spreadsheet. |
| **Key Vocabulary** | Computer  Desktop  Laptop  Mouse  Monitor  Buttons  Input  Output  Robot  Device  Technology  Tablet  Digital  Camera  Photo  Battery  Wires  Screen  Electricity  Invention  Design  Plan  Job  Scanner  Paying till  Digital recorders  Video  System | Algorithm  Decomposition  Data  Artificial intelligence  Algorithm  Loops  Abstraction  Unnecessary  Zoomed in  Key features  Debugging  Bugs  Error  Correcting | Keyboard  Keyboard character  Space bar  Word processing software  Touch typing  Delete  Backspace  Highlight  Undo  Redo  Bold  Italics  Underline  Text  Import  Image  Layout  Copy  Paste  Cut  Copyright  Author  Responsible  Uncomfortable  Digital citizens | ScratchJR  Coding  Instructions  Icon  Animation  Programming  Imitate  Fluid  Repeat  CGI  Sound recording  Icon  Button  'On tap'  Algorithm  Sequence  Loop Algorithm  Code  Program | Stop motion  Animation  Contraption  Video  Photo  Animator  Import image  Software  Upload  Download  Device  Camera  Storyboard  Decompose  Sketches  Narrate  Design  Plan  Creators  Filming  Character  Model  Frame  Background  Film  Film review | Space  International Space Station  Survival  Digital content  Interactive map  Satellite  Essential  Leisure  Astronaut  Transporting  Approximately  Dehydrated  Rehydrated  Multiple  To monitor  Sensor  Thermometer  Temperature  Display  Data  Insulation  Ammonia  Urine  Clean water  Waste water  Air conditioning  Freeze  Algorithm  Space exploration  Experiment  Laboratory  Galaxy  Water reservoir  Planet  Goldilocks zone  Interpret  Freezing temperature  Boiling |

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| **Year 3** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **Networks** | **Programming Scratch** | **Emailing** | **Journey Inside a Computer** | **Video Trailers** | **Top Trumps Databases** |
| **National Curriculum** | 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 | 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  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 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  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 | Using technology purposefully to create, organise, store, manipulate and retrieve digital content, including searching for relevant information. | 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 |
| **Computational Thinking** |  | Understanding that pro- grams execute by following precise and unambiguous instructions. |  |  |  |  |
| **Computers and Hardware** |  | Understanding what different components of a computer do. |  |  |  | Identifying network components and how data is transferred |
| **Digital Literacy and Online Safety** | Developing video skills, create a book trailer, storyboarding trailers before then filming and editing videos, adding effects such as transitions, music, voice and text |  | Learn about cyberbullying and fake emails.  Understanding the purpose of emails. | Understanding of data and databases, play with and create Top Trumps cards, learning how to interpret information by ordering and filtering | Developing their video skills, pupils create a book trailer, storyboarding their trailers before then  filming and editing their videos, adding effects such as transitions,  music, voice and text. |  |
| **Key Vocabulary** | Network  Wired  Wireless  WiFi  Devices  Internet  Component  Device  Laptop  Tablet  Desktop  Printer  Photocopier  Server  Network switch  Wireless access points  Network map  Router  File  Decompose  Algorithm  Network switch  Wireless Network  Phone line  Submarine cables | Tinkering  Programming application  Coding application  Code  Application  Interface  Sprite  Review  Predict Repetition  Loop  Program  Code Animation  Program  Decompose  Plan  Coding blocks  Remixing code  Storytelling  Program  Debug  Animation  Remixing code  Sprite Program  Game  Algorithm  Decompose  Code  Decompose  Coding blocks | Email  Log in  Log out  Information  Responsible citizen  WiFi  Image  Video  Sign in  Username  Domain  Email address  Password  Settings  Theme  Email account  Composing an email  Sending an email  Subject bar  Content  Attachment  Email account  Reply  Inbox  Link  Content  Document  Adding an attachment  Icons  Font  Emoji  Spam email  Tone of voice  Body language  Positive language  Negative language  Emotions  CC  BCC  Cyberbullying  Online  Digital citizen  Advice  Decision tree  Flowchart  Genuine  Fake  Link  Personal information  Install  Virus  Scammer  Hacker  Download  Mark it as spam | Input  Output  Computer  Monitor  Keyboard  Mouse  Data  Program  Desktop computer  Laptop  Microphone  Photocopier  Hard drive  CPU  RAM  ROM  GPU  Algorithm  Infinite loop  QR code  Components  Assemble  Disassemble  Memory  Hard drive  Tablet  Decompose  Batteries  Camera  Speaker  Touchscreen | Application  camera angle  clip  desktop  digital device  edit  film  film editing software, graphics  import (software)  key events  laptop  music  photo  plan  recording (electronic)  sound effects  storyboard  time code  trailer  video  voiceover | Records  Fields  Data  Information  Spreadsheet  Database  Category  Computer  PDF  Excel  Spreadsheet  Pros  Cons  Sort  Filter  Interpret  Questionnaire  Representation  Charts  Graphs  Plan  Online |

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| **Year 4** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **Collaborative Learning** | **Further Coding with Scratch** | **Website design** | **HTML** | **Computational Thinking** | **Investigating Weather** |
| **National Curriculum** | 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  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 logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs  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 | 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 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  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  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  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 | Use sequence, selection, and repetition in programs; work with variables and various forms of input and output  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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content |
| **Computational Thinking** | Understanding the role of inputs and outputs in computerised devices. | Understand decomposition is used in programming  Understand how to remix and adapt existing code  How to use loops and improve programming |  | Understanding that websites can be altered by exploring the code beneath the site. | Understand what decomposition is and how it facilitates problem solving.  Designing, writing and debugging programs that accomplish specific goals.  Understand abstraction and patterns recognition |  |
| **Computers and Hardware** |  |  |  |  |  |  |
| **Digital Literacy and Online Safety** | Understanding why some sources are more trustworthy than others. |  | Design and create websites, considering  content and style, as well as understanding the importance of working collaboratively | Recognising that information on the Internet might not be true or correct |  | Learning to work collaboratively in a responsible way using tools including Google Docs and Sheets  Understanding opportunities offered by the World Wide Web for communication and collaboration. |
| **Key Vocabulary** | Software  Collaboration  Online  Teamwork  Email account  Document  Link  Sharing  Contribution  Suggestions  Typing  Comment  Edited  Replied to  Resolved  Reviewing comments  Presentations  Presentation software  Images  Text  Transitions  Animations  Slides  Themes  Insert  Presenting  Survey  Share  Theme  Title  Multiple choice  Pie chart  Bar chart  Data representation  Spreadsheet  Share  Spreadsheets  Survey form  Icon  Data  View  Freeze  Conditional formatting  Format  Average  Numerical data | Algorithm  Animation  Application  Code  Code block  Coding application  Debug  Decompose  Interface  Game  Loop  Predict  Program  Remixing code  Repetition code  Review  Scratch  Sprite  Tinker | Content  Web page  Features  Record  Progress  Websites  Information  Audience  World Wide Web  Published  Hobby  Theme  Checklist  Review  Collaboration  Online  Features  Contribution  Design  Style  Images  Hyperlinks  Tab  Insert  Embed  Evaluate  Plan  Homepage  Subpage  Assessment | HTML  Internet browser  Start tag  End tag  Paragraph  Webpage  Heading  Input  Output  Script  Code  Text  Content  Tags  CSS  Remixing  Hex code  Fake news  Component  Hacking  Headline  URL  Copyright  Permission | Computational thinking  Decomposition  Abstraction  Algorithm  Code  Script  Sequence  Pattern recognition  Abstraction  Variable  Input  Output  Logical reasoning | Weather  Degrees  Measurement  Accurate  Evaporation  Condensation  Forecast  Solar panel  Cylinder  Pinwheel  Thermometer  Satellite  Cold  Warm  Rain  Wind  Temperature  Extreme weather  Sensor data  Sensitive  Climate zone  Accurate  Tornado  Lightning  Weather forecast  Collaboration  Temperature  Wind speed  Heat sensor  Chroma key  Green screen  Backdrop |

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| **Year 5** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **Search Engine** | **Programming Music using Sonic Pi or Scratch** | **Mars Rover 1** | **Micro:bit** | **Creating Media Stop Motion Animation** | **Mars Rover 2** |
| **National Curriculum** | 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 | 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  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 | 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  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 | Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts  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 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  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 | 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  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 | 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  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 |
| **Computational Thinking** | Using programming language to create music, including use of loops. |  |  | Using block coding to program a device.  To explore variables and different forms of input. | Decomposing animations into a series of images  Decomposing a story to be able to plan a program to tell a story  Using video editing software to animate |  |
| **Computers and Hardware** |  |  | Using search technologies effectively, appreciating how results are selected and ranked, and be discerning in evaluating digital content.  Recognising that computers transfer data in binary and understand simple binary addition. | Understand how external devices can be programmed by a separate computer. |  | Understanding how image data is transferred |
| **Digital Literacy and Online Safety** | Selecting using and combining a variety of software to design and create a range of programs | Recognising that information on the Internet might not be true or correct.  Know how to use key words to quickly find accurate information | Explore inputs and outputs as well as Binary numbers to understand how the Mars Rover transmits and receives data and how scientists are able to control it to explore another planet |  |  | Developing their CAD skills. |
| **Key Vocabulary** | Website  Search engine  Data leak  Privacy  Network  Real  Fake  Deceive  Information  Correct  Incorrect  Keywords  Task  Copyright  Fair  Credit  Appropriate  Inappropriate  Web crawler  Rank  Algorithm  Index  Search engine | Sonic Pi  Tinker  Predict  Programming  Music  Typing  Spacing  Performance  Coding  Tutorials  Error  Command  Instructions  Debugging  Program  Music  Sonic Pi  Commands  Loop  Errors  Code  Mindmap  Pitch  Rhythm  Tempo  Timbre  Soundtrack  Decompose  Plan  Program  Soundtrack  Plan  Programming  Play  Sleep  Repeat  Beat  Melody  Format  Timbre  Live Loops  Repetition  Output  Live code  Rehearsal  Buffer | Mars  Rover  Data  Space  Data transmission  Distance  Communicate  Design  Construction  Technology  Discovery  Planet  Scientist  Transmit  Internet  Research  Moon  Signal  Binary code  Numerical data  Sequence  8-bit binary  Radio signal  Transmit  Input  Output  Sequence  Instructions  RAM  Simulation  Byte  CPU  Binary numbers  Decimal numbers  Addition  Subtraction  Hexadecimal  Binary  Boolean  ASCII  Data | Tinkering  Device  Micro:bit  Webpage  Tablet  Pairing  App  Menu  Instructions  Screen  Wireless  Wifi  Bluetooth  Wires  Laptop  Desktop  Connection  USB  Download  Program  Coding  Internet  Animation  Input  Decompose  Images  Blocks  Program  Code  Load  Reset  Program  Repetition  Loop  Polling  Program  Designing  Predict  Variables  Pedometer  Code block  Variables  Outputs  Systematic  Sabotage  Programmer  Programming  Scoreboard  Create | Animation  Animator  Background  Character  Decomposition  Design  Digital device  Edit  Evaluate  Fkip Book  Fluid Movement  Frames  Model  Moving images  Onion skinning  Still images  Stop motion  Storyboard  Thaumatrope  Zoetrope | Input  Output  Memory  Pixel  Binary image  Compression  JPEG  ID card  Data  RGB  RAM  ROM  CPU  Fetch  Decode  Execute  Cycle  Algorithm  Operating system  3D  Drag and drop  CAD  Safe  Responsible  Online community |

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| **Year 6** | **Autumn Term 1** | **Autumn Term 2** | **Spring Term 1** | **Spring Term 2** | **Summer Term 1** | **Summer Term 2** |
| **Topic** | **Bletchly Park 1** | **Introduction to Python** | **Big Data 1** | **History of the Computer**  **Bletchly Park 2** | **Big Data 2** | **Inventing a product**  **Skills Showcase** |
| **National Curriculum** | 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 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  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  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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | 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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | 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  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 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  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 search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content |
| **Computational Thinking** | Using programming software to understand hacking, relating this to computer cracking codes in WWII. | Building on their knowledge of coding from previous years, children are introduced to the text-based programming language Python, which is the language behind many  apps and programs, such as Dropbox |  |  |  | Demonstrating their computational thinking skills by designing and debugging programs, using different inputs and outputs. |
| **Computers and Hardware** |  |  | Understanding that computer networks provide multiple services  Understanding how barcodes and QR codes work. | Learning about the history of computers and how they evolved over time. |  | Understanding how search engines work and knowing how to use them safely and effectively |
| **Digital Literacy and Online Safety** | Understanding the importance of secure passwords  and using searching and word processing skills to create a presentation. |  | Understanding how learning can be applied to a real world context. | Editing sound recordings for specific purpose. | Learn the difference between mobile data and WiFi and how data is transferred and use their understanding of big data to design their own smart school | Showcasing their digital literacy skills |
| **Key Vocabulary** | Secret  Cipher  Pig Latin  Code  Scrambled  Date shift cipher  Caesar cipher  Pigpen cipher  Acrostic Code  Nth Letter Cipher  Brute Force Hacking  Password  Secure  Chip and pin system  Trial and error  Combination  Cipher code  Password  Secure  Combination  Trial and error  Discovery  Invention  Technological advancement  Contribute  Convince  Hero  Present | Loop  Code  Command  Patterns  Instructions  Shape  Instructions  Repeat  Instructions  Input  Import  Design  Indentation  Patterns  Random  Output  Remix  Algorithm  Command  Instructions | Barcode  QR code  QR scanner  Infrared  Data  Transmission  Signal  Boolean  Binary  Proximity  RFID  Wireless  Chips  Encrypted  Radio waves  Barcodes  Privacy  Chips  Data  MagicBand  Algorithms  Systems/data analyst  Commuter  Contactless  Brand | Radio play  Sound effect  Sound clip  Track  File  Reverb  Overlay  Sound  Record  Play  FX  Script  Trailer  Background noise  Computer  Bytes  Kilobytes  Megabytes  Terrabytes  Gigabytes  Graphics  Hardware  Devices  Memory storage  Smartphone  Raspberry Pi  Hard disk drive  Byte  Megabyte  RAM  ROM  Hard drive  Processor  Touch screen  Trackpad  Mouse  Operating system | Corrupted  Wireless  QR codes  RFID  Infrared  Data  Stop motion  Bluetooth  WiFi  Data  SIM  Internet of Things  Simulation  WiFi  Smart city  Big Data  Smart school  Improve  Energy  Privacy  GPS  Personal  Threat  Revolution | Electronic  Product  Code  Evaluate  Design  Adapt  Selection  Repetition  Variables  Inputs  Outputs  Program  Algorithm  Design  Structures  Loops  Bugs  Coding  Debugging  Sequence  Software  Website  Images  Screenshot  Information  Image rights  Video  Advert  Edit  Photos |