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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 programsRecognise common uses of technology beyond schoolUse 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 instructionsCreate 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 instructionsCreate and debug simple programs | Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsRecognise common uses of technology beyond schoolUse 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 programsRecognise 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** | TexturesPortraitSelf-portraitOvalElipseSimilaritiesDifferencesFeaturesFacialShape toolFill toolBackgroundFillOutlineDrag and dropRight clickLeft clickMenuBring to the frontLayersLog inLoginLog offComputerMouseMouse pointerClickKeyboardScreenPasswordAccountSoftwareSketchpadClipartToolsBrushesEraserPredictExploreExplainDragDigital PhotographyDigital artUndoDuplicateCtrlSnap tools | Bee-BotAlgorithmCodeInstructionsVideoDemonstrationFilmingPauseClear instructionsPreciseVideo recordingExploreExplainControllerJudgeDestinationMap ProgramDebugMistakeProgrammingInputting | AlgorithmInstructionsComputerTasksOrderSpecificSolutionBugVirtualAssistantAssistanceInputOutputDevicesArtificial intelligenceProgrammingAutomaticSensorDecomposeDecompositionManageableOrganisingProblemChunksDirectionsDe-BugCodeCorrect | Pictorial storySequencePlanPhotoPicturesScreenCameraImageDigitalTabletDeletingDeviceEditingSoftwareVisual effectsCropFilterImportOnlineKeywordSearch enginePropsSave asDrag and dropInternetCollageDownloadOrientationResizeEditStorage space | DataRepresentationMapInformationObjectsTechnologyMousePictogramButtonPicturesClick and dragLabelResizeValuesChartsExperimentTablePie chartBar chartLine graphBlock graphData collectionDigitallyTallyCreateCountSortCategoriseIdentifyBranching databaseDoneProcessPlayInventionDesign | MaterialsDigital contentListCreateIdentifyPhysical propertiesSavedShareGraphicsEditing softwareProgramDigital imageFolderDocumentSaveComponentsAnnotateDesignInstructionsSequenceOrderModelPhotoEvaluateCreation processSpreadsheetDataInputCellsMeasureDistances |

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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 instructionsRecognise 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 instructionsCreate and debug simple programsUse 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 programsUse 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 instructionsCreate and debug simple programsUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsUse 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 programsRecognise 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 individualcomponents. |  |  |  | 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** | ComputerDesktopLaptopMouseMonitorButtonsInputOutputRobotDeviceTechnologyTabletDigitalCameraPhotoBatteryWiresScreenElectricityInventionDesignPlanJobScannerPaying tillDigital recordersVideoSystem | AlgorithmDecompositionDataArtificial intelligence AlgorithmLoopsAbstractionUnnecessaryZoomed inKey featuresDebuggingBugsErrorCorrecting | KeyboardKeyboard characterSpace barWord processing softwareTouch typingDeleteBackspace HighlightUndoRedoBoldItalicsUnderline TextImportImageLayoutCopyPasteCutCopyrightAuthor ResponsibleUncomfortableDigital citizens | ScratchJRCodingInstructionsIconAnimationProgrammingImitateFluidRepeatCGI Sound recordingIconButton'On tap' AlgorithmSequenceLoop AlgorithmCodeProgram | Stop motionAnimationContraptionVideoPhotoAnimatorImport imageSoftwareUploadDownloadDeviceCameraStoryboardDecomposeSketchesNarrateDesignPlanCreatorsFilmingCharacterModelFrameBackgroundFilmFilm review | SpaceInternational Space StationSurvivalDigital contentInteractive mapSatelliteEssentialLeisure AstronautTransportingApproximatelyDehydratedRehydratedMultipleTo monitorSensorThermometerTemperatureDisplayDataInsulationAmmoniaUrineClean waterWaste waterAir conditioningFreezeAlgorithmSpace explorationExperimentLaboratoryGalaxyWater reservoirPlanetGoldilocks zoneInterpretFreezing temperatureBoiling |

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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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse 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 collaborationSelect, 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 informationUse 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 partsUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsUnderstand 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** | NetworkWiredWirelessWiFiDevicesInternetComponentDeviceLaptopTabletDesktopPrinterPhotocopierServerNetwork switchWireless access pointsNetwork mapRouter FileDecomposeAlgorithmNetwork switch Wireless NetworkPhone lineSubmarine cables | TinkeringProgramming applicationCoding applicationCodeApplicationInterfaceSpriteReviewPredict RepetitionLoopProgramCode AnimationProgramDecomposePlanCoding blocksRemixing codeStorytellingProgramDebugAnimationRemixing codeSprite ProgramGameAlgorithmDecomposeCodeDecomposeCoding blocks | EmailLog inLog outInformationResponsible citizenWiFiImageVideoSign inUsernameDomainEmail addressPasswordSettingsThemeEmail accountComposing an emailSending an emailSubject barContentAttachmentEmail accountReplyInboxLinkContentDocumentAdding an attachmentIconsFontEmojiSpam emailTone of voiceBody languagePositive languageNegative languageEmotionsCCBCC CyberbullyingOnlineDigital citizenAdviceDecision treeFlowchartGenuineFakeLinkPersonal informationInstallVirusScammerHackerDownloadMark it as spam | InputOutputComputerMonitorKeyboardMouseDataProgramDesktop computerLaptopMicrophonePhotocopierHard driveCPURAMROMGPUAlgorithmInfinite loopQR codeComponentsAssembleDisassembleMemoryHard driveTabletDecomposeBatteriesCameraSpeakerTouchscreen | Applicationcamera angleclipdesktopdigital deviceeditfilmfilm editing software, graphicsimport (software)key eventslaptopmusicphotoplanrecording (electronic)sound effectsstoryboardtime codetrailervideovoiceover | RecordsFieldsDataInformationSpreadsheetDatabaseCategoryComputerPDFExcelSpreadsheetProsConsSortFilterInterpretQuestionnaireRepresentationChartsGraphsPlanOnline |

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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 collaborationSelect, 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 programsDesign, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller partsUse 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 informationUse 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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsUse 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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse 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 outputSelect, 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 informationUse 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 programmingUnderstand how to remix and adapt existing codeHow 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, consideringcontent 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 SheetsUnderstanding opportunities offered by the World Wide Web for communication and collaboration. |
| **Key Vocabulary** | SoftwareCollaborationOnlineTeamworkEmail accountDocumentLinkSharingContributionSuggestionsTypingCommentEditedReplied toResolvedReviewing commentsPresentationsPresentation softwareImagesTextTransitionsAnimationsSlidesThemesInsertPresentingSurveyShareThemeTitleMultiple choicePie chartBar chartData representationSpreadsheetShareSpreadsheetsSurvey formIconDataViewFreezeConditional formattingFormatAverageNumerical data | AlgorithmAnimationApplicationCodeCode blockCoding applicationDebugDecomposeInterfaceGameLoopPredictProgramRemixing codeRepetition codeReviewScratchSpriteTinker  | ContentWeb pageFeaturesRecordProgressWebsitesInformationAudienceWorld Wide WebPublishedHobbyThemeChecklistReviewCollaborationOnlineFeaturesContributionDesignStyleImagesHyperlinksTabInsertEmbedEvaluatePlanHomepageSubpageAssessment | HTMLInternet browserStart tagEnd tagParagraphWebpageHeadingInputOutputScriptCodeTextContentTagsCSSRemixingHex codeFake newsComponentHackingHeadlineURLCopyrightPermission | Computational thinkingDecompositionAbstractionAlgorithmCode ScriptSequencePattern recognitionAbstractionVariable InputOutputLogical reasoning  | WeatherDegreesMeasurementAccurateEvaporationCondensationForecastSolar panelCylinderPinwheelThermometerSatelliteColdWarmRainWindTemperatureExtreme weatherSensor dataSensitiveClimate zoneAccurateTornadoLightningWeather forecastCollaborationTemperatureWind speedHeat sensorChroma keyGreen screenBackdrop |

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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 collaborationUse 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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsSelect, 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 collaborationSelect, 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 partsUnderstand 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 collaborationUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsSelect, 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 informationDesign, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller partsUse 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 collaborationSelect, 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 imagesDecomposing a story to be able to plan a program to tell a storyUsing 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** | WebsiteSearch engineData leakPrivacyNetwork RealFakeDeceiveInformationCorrectIncorrectKeywordsTaskCopyrightFairCreditAppropriateInappropriateWeb crawlerRankAlgorithmIndexSearch engine | Sonic PiTinkerPredictProgrammingMusicTypingSpacingPerformanceCodingTutorialsErrorCommandInstructionsDebuggingProgramMusicSonic PiCommandsLoopErrorsCodeMindmapPitchRhythmTempoTimbreSoundtrackDecomposePlanProgramSoundtrackPlanProgrammingPlaySleepRepeatBeatMelodyFormatTimbreLive LoopsRepetitionOutputLive codeRehearsalBuffer | MarsRoverDataSpaceData transmissionDistanceCommunicateDesignConstructionTechnologyDiscoveryPlanetScientistTransmitInternetResearchMoonSignalBinary codeNumerical dataSequence8-bit binaryRadio signalTransmitInputOutputSequenceInstructionsRAMSimulationByteCPUBinary numbersDecimal numbersAdditionSubtractionHexadecimalBinaryBooleanASCIIData | TinkeringDeviceMicro:bitWebpageTabletPairingAppMenuInstructionsScreenWirelessWifiBluetoothWiresLaptopDesktopConnectionUSBDownloadProgramCodingInternetAnimationInputDecomposeImagesBlocksProgramCodeLoadResetProgramRepetitionLoopPollingProgramDesigningPredictVariablesPedometerCode blockVariablesOutputsSystematicSabotage ProgrammerProgrammingScoreboardCreate | AnimationAnimatorBackgroundCharacterDecompositionDesignDigital deviceEditEvaluateFkip BookFluid MovementFramesModelMoving imagesOnion skinningStill imagesStop motionStoryboardThaumatropeZoetrope | InputOutputMemoryPixelBinary imageCompressionJPEGID cardDataRGBRAMROMCPUFetch DecodeExecute CycleAlgorithmOperating system3DDrag and dropCADSafeResponsibleOnline 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 collaborationUse search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital contentSelect, 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 informationUse 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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse 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 collaborationSelect, 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 informationUse 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 collaborationUse search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital contentSelect, 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 informationUse 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 collaborationSelect, 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 informationUse 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 partsUse sequence, selection, and repetition in programs; work with variables and various forms of input and outputUse logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programsUnderstand 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 collaborationUse search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital contentSelect, 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 informationUse 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 manyapps 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 servicesUnderstanding 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 passwordsand 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** | SecretCipherPig LatinCodeScrambledDate shift cipherCaesar cipherPigpen cipherAcrostic CodeNth Letter CipherBrute Force HackingPasswordSecureChip and pin systemTrial and errorCombinationCipher codePasswordSecureCombinationTrial and errorDiscoveryInventionTechnological advancementContributeConvinceHeroPresent | LoopCodeCommandPatternsInstructionsShapeInstructionsRepeatInstructionsInputImportDesignIndentationPatternsRandomOutputRemixAlgorithmCommandInstructions | BarcodeQR codeQR scannerInfraredDataTransmissionSignalBooleanBinaryProximityRFIDWirelessChipsEncryptedRadio wavesBarcodesPrivacyChipsDataMagicBandAlgorithmsSystems/data analystCommuterContactlessBrand | Radio playSound effectSound clipTrackFileReverbOverlaySoundRecordPlayFXScriptTrailerBackground noiseComputerBytesKilobytesMegabytesTerrabytesGigabytesGraphicsHardwareDevicesMemory storageSmartphoneRaspberry PiHard disk driveByteMegabyteRAMROMHard driveProcessorTouch screenTrackpadMouseOperating system | CorruptedWirelessQR codesRFIDInfraredDataStop motionBluetoothWiFiDataSIMInternet of ThingsSimulationWiFiSmart cityBig DataSmart schoolImproveEnergyPrivacyGPSPersonalThreatRevolution | ElectronicProductCodeEvaluateDesignAdaptSelectionRepetitionVariablesInputsOutputsProgramAlgorithmDesignStructuresLoopsBugsCodingDebuggingSequenceSoftwareWebsiteImagesScreenshotInformationImage rights VideoAdvertEditPhotos |