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| **EYFS** | The Early Years Statutory Framework aims to ensure that all pupils: |

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|  | **Pre2 and Pre3** | **Nursery** | **Reception** |
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| **National Curriculum** | The national curriculum for [subject] aims to ensure that all pupils: * Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
* Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
* Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
* Are responsible, competent, confident and creative users of information and communication technology
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|  | **Year 1** | **Year 2** | **Year 3** | **Year 4**  | **Year 5** | **Year 6** |
| **Networks** |  | To recognise the uses and features of information technologyTo identify information technology in the homeTo identify information technology beyond schoolTo explain how information technology benefits usTo show how to use information technology safelyTo recognise that choices are made when using information technology | To explain how a computer network can be used to share informationTo explore how digital devices can be connectedTo recognise the physical components of a network | To describe how networks physically connect to other networksTo recognise how networked devices make up the internetTo outline how websites can be shared via the World Wide WebTo describe how content can be added and accessed on the World Wide WebTo recognise how the content of the WWW is created by peopleTo evaluate the consequences of unreliable content | To recognise how information is transferred over the internetTo explain how sharing information online lets people in different places work togetherTo contribute to a shared project onlineTo evaluate different ways of working together online | To identify how to use a search engineTo describe how search engines select resultsTo explain how search results are rankedTo recognise why the order of results is important, and to whomTo recognise how we communicate using technologyTo evaluate different methods of online communicationTo review an existing website and consider its structure |
| **Creating Media** | To describe what different freehand tools doTo use the shape and line toolsTo make careful choices when painting a digital picture and changing textTo explain why I chose the tools I usedTo use a computer on my own to paint a picture and writeTo compare painting a picture on a computer and on paperTo add and remove text on a computerTo identify that the look of text can be changed on a computerTo compare writing on a computer with writing on paper | To know what devices can be used to take photographsTo use a digital device to take a photographTo describe what makes a good photographTo decide how photographs can be improvedTo use tools to change an imageTo recognise that images can be changedTo say how music can make us feelTo identify that there are patterns in musicTo describe how music can be used in different waysTo show how music is made from a series of notesTo create music for a purposeTo review and refine our computer work | To explain that animation is a sequence of drawings or photographsTo relate animated movement with a sequence of imagesTo plan an animationTo review and improve an animationTo evaluate the impact of adding other media to an animationTo create a project from a task descriptionTo recognise how text and images convey informationTo recognise that text and layout can be editedTo choose appropriate page settingsTo add content to a desktop publishing publicationTo consider how different layouts can suit different purposesTo consider the benefits of desktop publishingTo explain that digital images can be changedTo change the composition of an imageTo describe how images can be changed for different usesTo make good choices when selecting different toolsTo recognise that not all images are realTo evaluate how changes can improve an image | To use a digital device to record soundTo explain that a digital recording is stored as a fileTo explain that audio can be changed through editingTo show that different types of audio can be combined and played togetherTo evaluate editing choices made | To recognise video as moving pictures, which can include audioTo identify digital devices that can record videoTo capture video using a digital deviceTo recognise the features of an effective videoTo identify that video can be improved through reshooting and editingTo consider the impact of the choices made when making and sharing a videoTo identify that drawing tools can be used to produce different outcomesTo create a vector drawing by combining shapesTo use tools to achieve a desired effectTo recognise that vector drawings consist of layersTo group objects to make them easier to work withTo evaluate my vector drawing | To review an existing website and consider its structureTo plan the features of a web pageTo consider the ownership and use of images (copyright)To recognise the need to preview pagesTo outline the need for a navigation pathTo recognise the implications of linking to content owned by other peopleTo choose suitable ways to present dataTo use a computer to create and manipulate three-dimensional (3D) digital objectsTo compare working digitally with 2D and 3D graphicsTo construct a digital 3D model of a physical objectTo identify that physical objects can be broken down into a collection of 3D shapesTo design a digital model by combining 3D objectsTo develop and improve a digital 3D model |
| **Data & Information** | To label objectsTo identify that objects can be countedTo describe objects in different waysTo count objects with the same propertiesTo compare groups of objectsTo answer questions about groups of objects | To recognise that we can count and compare objects using tally chartsTo recognise that objects can be represented as picturesTo create a pictogramTo select objects by attribute and make comparisonsTo recognise that people can be described by attributesTo explain that we can present information using a computerTo describe how music can be used in different waysTo show how music is made from a series of notes | To create questions with yes/no answersTo identify the object attributes needed to collect relevant dataTo create a branching databaseTo identify objects using a branching databaseTo explain why it is helpful for a database to be well structuredTo compare the information shown in a pictogram with a branching database | To identify that sound can be digitally recordedTo explain that a digital recording is stored as a fileTo explain that data gathered over time can be used to answer questionsTo use a digital device to collect data automaticallyTo explain that a data logger collects ‘data points’ from sensors over timeTo use data collected over a long duration to find informationTo identify the data needed to answer questionsTo use collected data to answer questions | To use a form to record informationTo compare paper and computer-based databasesTo outline how grouping and then sorting data allows us to answer questionsTo explain that tools can be used to select specific dataTo explain that computer programs can be used to compare data visuallyTo apply my knowledge of a database to ask and answer real-world questionsTo identify that drawing tools can be used to produce different outcomes | To identify questions which can be answered using dataTo explain that objects can be described using dataTo explain that formula can be used to produce calculated dataTo apply formulas to data, including duplicatingTo create a spreadsheet to plan an eventTo choose suitable ways to present data |
| **Design & Development** | To explain why I chose the tools I usedTo compare painting a picture on a computer and on paperTo plan a simple programTo explain why I used the tools that I choseTo design the parts of a projectTo use my algorithm to create a program | To describe what makes a good photographTo decide how photographs can be improvedTo explain that programming projects can have code and artworkTo design an algorithmTo create and debug a program that I have writtenTo create music for a purposeTo create a program using a given designTo change a given designTo create a program using my own designTo decide how my project can be improved | To change the appearance of my projectTo create a project from a task descriptionTo explain why it is helpful for a database to be well structuredTo compare the information shown in a pictogram with a branching databaseTo consider how different layouts can suit different purposesTo consider the benefits of desktop publishingTo identify and fix bugs in a programTo design and create a maze-based challenge | To use a digital device to record soundTo explain that a digital recording is stored as a fileTo evaluate editing choices madeTo describe how images can be changed for different usesTo evaluate how changes can improve an imageTo develop the use of count-controlled loops in a different programming environmentTo develop a design which includes two or more loops which run at the same timeTo design a project that includes repetitionTo create a project that includes repetition | To recognise video as moving pictures, which can include audioTo recognise the features of an effective videoTo consider the impact of the choices made when making and sharing a videoTo design a physical project that includes selectionTo create a controllable system that includes selectionTo compare paper and computer-based databasesTo evaluate my vector drawingTo design a program which uses selectionTo create a program which uses selectionTo evaluate my program | To evaluate different methods of online communicationTo review an existing website and consider its structureTo plan the features of a web pageTo consider the ownership and use of images (copyright)To recognise the need to preview pagesTo outline the need for a navigation pathTo recognise the implications of linking to content owned by other peopleTo choose how to improve a game by using variablesTo design a project that builds on a given exampleTo use my design to create a projectTo evaluate my projectTo design a digital model by combining 3D objectsTo develop and improve a digital 3D modelTo design a project that uses inputs and outputs on a controllable deviceTo develop a program to use inputs and outputs on a controllable device |
| **Computing Systems** | To identify technologyTo identify a computer and its main partsTo use a mouse in different waysTo use a keyboard to type and edit textTo create rules for using technology responsiblyTo recognise the uses and features of information technologyTo identify information technology in the home and beyond schoolTo explain how information technology benefits usTo show how to use information technology safelyTo recognise that choices are made when using information technology | To know what devices can be used to take photographsTo use a digital device to take a photograph | To explain how digital devices functionTo identify input and output devicesTo recognise how digital devices can change the way we workTo explain how a computer network can be used to share informationTo explore how digital devices can be connectedTo recognise the physical components of a network | To use a digital device to collect data automaticallyTo explain that a data logger collects ‘data points’ from sensors over timeTo identify the data needed to answer questionsTo use collected data to answer questions | To explain that computers can be connected together to form systemsTo recognise the role of computer systems in our livesTo identify digital devices that can record videoTo control a simple circuit connected to a computerTo write a program that includes count-controlled loopsTo explain that a loop can stop when a condition is met, eg number of timesTo design a physical project that includes selectionTo create a controllable system that includes selection | To create a program to run on a controllable deviceTo explain that selection can control the flow of a programTo update a variable with a user inputTo use an conditional statement to compare a variable to a valueTo design a project that uses inputs and outputs on a controllable deviceTo develop a program to use inputs and outputs on a controllable device |
| **Impact of Technology** | To identify information technology in the homeTo identify information technology beyond schoolTo explain how information technology benefits us |  | To recognise how digital devices can change the way we workTo consider the benefits of desktop publishing | To evaluate the consequences of unreliable contentTo change the composition of an image | To recognise the role of computer systems in our livesTo explain how sharing information online lets people in different places work together | To recognise why the order of results is important, and to whomTo recognise the implications of linking to content owned by other people |
| **Algorithms** | To explain what a given command will doTo act out a given wordTo plan a simple programTo find more than one solution to a problemTo use my algorithm to create a program | To describe a series of instructions as a sequenceTo explain what happens when we change the order of instructionsTo use logical reasoning to predict the outcome of a program (series of commands)To explain that programming projects can have code and artworkTo design an algorithmTo create and debug a program that I have written | To create a project from a task description | To identify that accuracy in programming is importantTo explain what ‘repeat’ meansTo decompose a program into partsTo explain that in programming there are infinite loops and count controlled loops | To explain how selection is used in computer programsTo relate that a conditional statement connects a condition to an outcomeTo explain how selection directs the flow of a program |  |
| **Programming** | To combine forwards and backwards commands to make a sequenceTo combine four direction commands to make sequencesTo choose a command for a given purposeTo show that a series of commands can be joined togetherTo identify the effect of changing a valueTo explain that each sprite has its own instructionsTo design the parts of a projectTo use my algorithm to create a program | To use logical reasoning to predict the outcome of a program (series of commands)To explain that programming projects can have code and artworkTo create and debug a program that I have writtenTo explain that a sequence of commands has a startTo explain that a sequence of commands has an outcomeTo create a program using a given designTo change a given designTo create a program using my own designTo decide how my project can be improved | To explore a new programming environmentI can identify that each sprite is controlled by the commands I chooseTo explain that a program has a startTo recognise that a sequence of commands can have an orderTo change the appearance of my projectTo create a project from a task descriptionTo explain how a sprite moves in an existing projectTo create a program to move a sprite in four directionsTo adapt a program to a new contextTo develop my program by adding featuresTo identify and fix bugs in a programTo design and create a maze-based challenge | To identify that accuracy in programming is importantTo create a program in a text-based languageTo explain what ‘repeat’ meansTo modify a count-controlled loop to produce a given outcomeTo decompose a program into partsTo create a program that uses count-controlled loops to produce a given outcomeTo develop the use of count-controlled loops in a different programming environmentTo explain that in programming there are infinite loops and count controlled loopsTo develop a design which includes two or more loops which run at the same timeTo modify an infinite loop in a given programTo design a project that includes repetitionTo create a project that includes repetition | To control a simple circuit connected to a computerTo write a program that includes count-controlled loopsTo explain that a loop can stop when a condition is met, eg number of timesTo conclude that a loop can be used to repeatedly check whether a condition has been metTo design a physical project that includes selectionTo create a controllable system that includes selectionTo explain how selection is used in computer programsTo relate that a conditional statement connects a condition to an outcomeTo explain how selection directs the flow of a programTo design a program which uses selectionTo create a program which uses selectionTo evaluate my program | To define a ‘variable’ as something that is changeableTo explain why a variable is used in a programTo choose how to improve a game by using variablesTo design a project that builds on a given exampleTo use my design to create a project and evaluate itTo create a program to run on a controllable deviceTo explain that selection can control the flow of a programTo update a variable with a user inputTo use an conditional statement to compare a variable to a valueTo design a project that uses inputs and outputs on a controllable deviceTo develop a program to use inputs and outputs on a controllable device |
| **Effective Use of tools** | To use a mouse in different waysTo use a keyboard to type and edit textTo create rules for using technology responsiblyTo describe what different freehand tools doTo use the shape tool and the line toolsTo make careful choices when painting a digital pictureTo explain why I chose the tools I usedTo use a computer on my own to paint a pictureTo compare painting a picture on a computer and on paperTo use a computer to writeTo add and remove text on a computerTo identify that the look of text can be changed on a computerTo make careful choices when changing textTo explain why I used the tools that I choseTo compare writing on a computer with writing on paper | To use a digital device to take a photographTo decide how photographs can be improvedTo use tools to change an imageTo recognise that images can be changedTo recognise that objects can be represented as picturesTo create a pictogramTo select objects by attribute and make comparisonsTo recognise that people can be described by attributesTo explain that we can present information using a computerTo create music for a purposeTo review and refine our computer work | To explain that animation is a sequence of drawings or photographsTo relate animated movement with a sequence of imagesTo identify the need to work consistently and carefullyTo review and improve an animationTo evaluate the impact of adding other media to an animationTo explore a new programming environmentTo create a branching databaseTo identify objects using a branching databaseTo explain why it is helpful for a database to be well structuredTo recognise that text and layout can be editedTo choose appropriate page settingsTo add content to a desktop publishing publicationTo consider how different layouts can suit different purposesTo consider the benefits of desktop publishingTo explain how a sprite moves in an existing projectTo create a program to move a sprite in four directions | To use a digital device to record soundTo explain that a digital recording is stored as a fileTo explain that audio can be changed through editingTo show that different types of audio can be combined and played togetherTo create a program in a text-based languageTo use a digital device to collect data automaticallyTo explain that a data logger collects ‘data points’ from sensors over timeTo use data collected over a long duration to find informationTo identify the data needed to answer questionsTo explain that digital images can be changedTo change the composition of an imageTo describe how images can be changed for different usesTo make good choices when selecting different toolsTo recognise that not all images are realTo evaluate how changes can improve an image | To contribute to a shared project onlineTo evaluate different ways of working together onlineTo recognise the features of an effective videoTo identify that video can be improved through reshooting and editingTo consider the impact of the choices made when making and sharing a videoTo use a form to record informationTo explain that tools can be used to select specific dataTo explain that computer programs can be used to compare data visuallyTo apply my knowledge of a database to ask and answer real-world questionsTo identify that drawing tools can be used to produce different outcomesTo create a vector drawing by combining shapesTo use tools to achieve a desired effectTo recognise that vector drawings consist of layersTo group objects to make them easier to work with | To identify how to use a search engineTo describe how search engines select resultsTo explain how search results are rankedTo recognise why the order of results is important, and to whomTo recognise how we communicate using technologyTo evaluate different methods of online communicationTo recognise the need to preview pagesTo outline the need for a navigation pathTo recognise the implications of linking to content owned by other peopleTo explain that formula can be used to produce calculated dataTo apply formulas to data, including duplicatingTo create a spreadsheet to plan an eventTo choose suitable ways to present dataTo use a computer to create and manipulate three-dimensional (3D) digital objectsTo compare working digitally with 2D and 3D graphicsTo construct a digital 3D model of a physical objectTo identify that physical objects can be broken down into a collection of 3D shapesTo design a digital model by combining 3D objectsTo develop and improve a digital 3D model |
| **Safety & Security** | To create rules for using technology responsibly | To recognise the uses and features of information technologyTo show how to use information technology safelyTo recognise that choices are made when using information technology |  | To describe how networks physically connect to other networks | To recognise that not all images are realTo capture video using a digital device | To consider the ownership and use of images (copyright) |