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

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pre2 and Pre3** | **Nursery** | **Reception** |
|  |  |  |  |
|  |  |  |  |

|  |  |
| --- | --- |
| **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 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Networks** |  | To recognise the uses and features of information technology  To identify information technology in the home  To identify information technology beyond school  To explain how information technology benefits us  To show how to use information technology safely  To recognise that choices are made when using information technology | To explain how a computer network can be used to share information  To explore how digital devices can be connected  To recognise the physical components of a network | To describe how networks physically connect to other networks  To recognise how networked devices make up the internet  To outline how websites can be shared via the World Wide Web  To describe how content can be added and accessed on the World Wide Web  To recognise how the content of the WWW is created by people  To evaluate the consequences of unreliable content | To recognise how information is transferred over the internet  To explain how sharing information online lets people in different places work together  To contribute to a shared project online  To evaluate different ways of working together online | To identify how to use a search engine  To describe how search engines select results  To explain how search results are ranked  To recognise why the order of results is important, and to whom  To recognise how we communicate using technology  To evaluate different methods of online communication  To review an existing website and consider its structure |
| **Creating Media** | To describe what different freehand tools do  To use the shape and line tools  To make careful choices when painting a digital picture and changing text  To explain why I chose the tools I used  To use a computer on my own to paint a picture and write  To compare painting a picture on a computer and on paper  To add and remove text on a computer  To identify that the look of text can be changed on a computer  To compare writing on a computer with writing on paper | To know what devices can be used to take photographs  To use a digital device to take a photograph  To describe what makes a good photograph  To decide how photographs can be improved  To use tools to change an image  To recognise that images can be changed  To say how music can make us feel  To identify that there are patterns in music  To describe how music can be used in different ways  To show how music is made from a series of notes  To create music for a purpose  To review and refine our computer work | To explain that animation is a sequence of drawings or photographs  To relate animated movement with a sequence of images  To plan an animation  To review and improve an animation  To evaluate the impact of adding other media to an animation  To create a project from a task description  To recognise how text and images convey information  To recognise that text and layout can be edited  To choose appropriate page settings  To add content to a desktop publishing publication  To consider how different layouts can suit different purposes  To consider the benefits of desktop publishing  To explain that digital images can be changed  To change the composition of an image  To describe how images can be changed for different uses  To make good choices when selecting different tools  To recognise that not all images are real  To evaluate how changes can improve an image | To use a digital device to record sound  To explain that a digital recording is stored as a file  To explain that audio can be changed through editing  To show that different types of audio can be combined and played together  To evaluate editing choices made | To recognise video as moving pictures, which can include audio  To identify digital devices that can record video  To capture video using a digital device  To recognise the features of an effective video  To identify that video can be improved through reshooting and editing  To consider the impact of the choices made when making and sharing a video  To identify that drawing tools can be used to produce different outcomes  To create a vector drawing by combining shapes  To use tools to achieve a desired effect  To recognise that vector drawings consist of layers  To group objects to make them easier to work with  To evaluate my vector drawing | To review an existing website and consider its structure  To plan the features of a web page  To consider the ownership and use of images (copyright)  To recognise the need to preview pages  To outline the need for a navigation path  To recognise the implications of linking to content owned by other people  To choose suitable ways to present data  To use a computer to create and manipulate three-dimensional (3D) digital objects  To compare working digitally with 2D and 3D graphics  To construct a digital 3D model of a physical object  To identify that physical objects can be broken down into a collection of 3D shapes  To design a digital model by combining 3D objects  To develop and improve a digital 3D model |
| **Data & Information** | To label objects  To identify that objects can be counted  To describe objects in different ways  To count objects with the same properties  To compare groups of objects  To answer questions about groups of objects | To recognise that we can count and compare objects using tally charts  To recognise that objects can be represented as pictures  To create a pictogram  To select objects by attribute and make comparisons  To recognise that people can be described by attributes  To explain that we can present information using a computer  To describe how music can be used in different ways  To show how music is made from a series of notes | To create questions with yes/no answers  To identify the object attributes needed to collect relevant data  To create a branching database  To identify objects using a branching database  To explain why it is helpful for a database to be well structured  To compare the information shown in a pictogram with a branching database | To identify that sound can be digitally recorded  To explain that a digital recording is stored as a file  To explain that data gathered over time can be used to answer questions  To use a digital device to collect data automatically  To explain that a data logger collects ‘data points’ from sensors over time  To use data collected over a long duration to find information  To identify the data needed to answer questions  To use collected data to answer questions | To use a form to record information  To compare paper and computer-based databases  To outline how grouping and then sorting data allows us to answer questions  To explain that tools can be used to select specific data  To explain that computer programs can be used to compare data visually  To apply my knowledge of a database to ask and answer real-world questions  To identify that drawing tools can be used to produce different outcomes | To identify questions which can be answered using data  To explain that objects can be described using data  To explain that formula can be used to produce calculated data  To apply formulas to data, including duplicating  To create a spreadsheet to plan an event  To choose suitable ways to present data |
| **Design & Development** | To explain why I chose the tools I used  To compare painting a picture on a computer and on paper  To plan a simple program  To explain why I used the tools that I chose  To design the parts of a project  To use my algorithm to create a program | To describe what makes a good photograph  To decide how photographs can be improved  To explain that programming projects can have code and artwork  To design an algorithm  To create and debug a program that I have written  To create music for a purpose  To create a program using a given design  To change a given design  To create a program using my own design  To decide how my project can be improved | To change the appearance of my project  To create a project from a task description  To explain why it is helpful for a database to be well structured  To compare the information shown in a pictogram with a branching database  To consider how different layouts can suit different purposes  To consider the benefits of desktop publishing  To identify and fix bugs in a program  To design and create a maze-based challenge | To use a digital device to record sound  To explain that a digital recording is stored as a file  To evaluate editing choices made  To describe how images can be changed for different uses  To evaluate how changes can improve an image  To develop the use of count-controlled loops in a different programming environment  To develop a design which includes two or more loops which run at the same time  To design a project that includes repetition  To create a project that includes repetition | To recognise video as moving pictures, which can include audio  To recognise the features of an effective video  To consider the impact of the choices made when making and sharing a video  To design a physical project that includes selection  To create a controllable system that includes selection  To compare paper and computer-based databases  To evaluate my vector drawing  To design a program which uses selection  To create a program which uses selection  To evaluate my program | To evaluate different methods of online communication  To review an existing website and consider its structure  To plan the features of a web page  To consider the ownership and use of images (copyright)  To recognise the need to preview pages  To outline the need for a navigation path  To recognise the implications of linking to content owned by other people  To choose how to improve a game by using variables  To design a project that builds on a given example  To use my design to create a project  To evaluate my project  To design a digital model by combining 3D objects  To develop and improve a digital 3D model  To design a project that uses inputs and outputs on a controllable device  To develop a program to use inputs and outputs on a controllable device |
| **Computing Systems** | To identify technology  To identify a computer and its main parts  To use a mouse in different ways  To use a keyboard to type and edit text  To create rules for using technology responsibly  To recognise the uses and features of information technology  To identify information technology in the home and beyond school  To explain how information technology benefits us  To show how to use information technology safely  To recognise that choices are made when using information technology | To know what devices can be used to take photographs  To use a digital device to take a photograph | To explain how digital devices function  To identify input and output devices  To recognise how digital devices can change the way we work  To explain how a computer network can be used to share information  To explore how digital devices can be connected  To recognise the physical components of a network | To use a digital device to collect data automatically  To explain that a data logger collects ‘data points’ from sensors over time  To identify the data needed to answer questions  To use collected data to answer questions | To explain that computers can be connected together to form systems  To recognise the role of computer systems in our lives  To identify digital devices that can record video  To control a simple circuit connected to a computer  To write a program that includes count-controlled loops  To explain that a loop can stop when a condition is met, eg number of times  To design a physical project that includes selection  To create a controllable system that includes selection | To create a program to run on a controllable device  To explain that selection can control the flow of a program  To update a variable with a user input  To use an conditional statement to compare a variable to a value  To design a project that uses inputs and outputs on a controllable device  To develop a program to use inputs and outputs on a controllable device |
| **Impact of Technology** | To identify information technology in the home  To identify information technology beyond school  To explain how information technology benefits us |  | To recognise how digital devices can change the way we work  To consider the benefits of desktop publishing | To evaluate the consequences of unreliable content  To change the composition of an image | To recognise the role of computer systems in our lives  To explain how sharing information online lets people in different places work together | To recognise why the order of results is important, and to whom  To recognise the implications of linking to content owned by other people |
| **Algorithms** | To explain what a given command will do  To act out a given word  To plan a simple program  To find more than one solution to a problem  To use my algorithm to create a program | To describe a series of instructions as a sequence  To explain what happens when we change the order of instructions  To use logical reasoning to predict the outcome of a program (series of commands)  To explain that programming projects can have code and artwork  To design an algorithm  To create and debug a program that I have written | To create a project from a task description | To identify that accuracy in programming is important  To explain what ‘repeat’ means  To decompose a program into parts  To explain that in programming there are infinite loops and count controlled loops | To explain how selection is used in computer programs  To relate that a conditional statement connects a condition to an outcome  To explain how selection directs the flow of a program |  |
| **Programming** | To combine forwards and backwards commands to make a sequence  To combine four direction commands to make sequences  To choose a command for a given purpose  To show that a series of commands can be joined together  To identify the effect of changing a value  To explain that each sprite has its own instructions  To design the parts of a project  To 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 artwork  To create and debug a program that I have written  To explain that a sequence of commands has a start  To explain that a sequence of commands has an outcome  To create a program using a given design  To change a given design  To create a program using my own design  To decide how my project can be improved | To explore a new programming environment  I can identify that each sprite is controlled by the commands I choose  To explain that a program has a start  To recognise that a sequence of commands can have an order  To change the appearance of my project  To create a project from a task description  To explain how a sprite moves in an existing project  To create a program to move a sprite in four directions  To adapt a program to a new context  To develop my program by adding features  To identify and fix bugs in a program  To design and create a maze-based challenge | To identify that accuracy in programming is important  To create a program in a text-based language  To explain what ‘repeat’ means  To modify a count-controlled loop to produce a given outcome  To decompose a program into parts  To create a program that uses count-controlled loops to produce a given outcome  To develop the use of count-controlled loops in a different programming environment  To explain that in programming there are infinite loops and count controlled loops  To develop a design which includes two or more loops which run at the same time  To modify an infinite loop in a given program  To design a project that includes repetition  To create a project that includes repetition | To control a simple circuit connected to a computer  To write a program that includes count-controlled loops  To explain that a loop can stop when a condition is met, eg number of times  To conclude that a loop can be used to repeatedly check whether a condition has been met  To design a physical project that includes selection  To create a controllable system that includes selection  To explain how selection is used in computer programs  To relate that a conditional statement connects a condition to an outcome  To explain how selection directs the flow of a program  To design a program which uses selection  To create a program which uses selection  To evaluate my program | To define a ‘variable’ as something that is changeable  To explain why a variable is used in a program  To choose how to improve a game by using variables  To design a project that builds on a given example  To use my design to create a project and evaluate it  To create a program to run on a controllable device  To explain that selection can control the flow of a program  To update a variable with a user input  To use an conditional statement to compare a variable to a value  To design a project that uses inputs and outputs on a controllable device  To develop a program to use inputs and outputs on a controllable device |
| **Effective Use of tools** | To use a mouse in different ways  To use a keyboard to type and edit text  To create rules for using technology responsibly  To describe what different freehand tools do  To use the shape tool and the line tools  To make careful choices when painting a digital picture  To explain why I chose the tools I used  To use a computer on my own to paint a picture  To compare painting a picture on a computer and on paper  To use a computer to write  To add and remove text on a computer  To identify that the look of text can be changed on a computer  To make careful choices when changing text  To explain why I used the tools that I chose  To compare writing on a computer with writing on paper | To use a digital device to take a photograph  To decide how photographs can be improved  To use tools to change an image  To recognise that images can be changed  To recognise that objects can be represented as pictures  To create a pictogram  To select objects by attribute and make comparisons  To recognise that people can be described by attributes  To explain that we can present information using a computer  To create music for a purpose  To review and refine our computer work | To explain that animation is a sequence of drawings or photographs  To relate animated movement with a sequence of images  To identify the need to work consistently and carefully  To review and improve an animation  To evaluate the impact of adding other media to an animation  To explore a new programming environment  To create a branching database  To identify objects using a branching database  To explain why it is helpful for a database to be well structured  To recognise that text and layout can be edited  To choose appropriate page settings  To add content to a desktop publishing publication  To consider how different layouts can suit different purposes  To consider the benefits of desktop publishing  To explain how a sprite moves in an existing project  To create a program to move a sprite in four directions | To use a digital device to record sound  To explain that a digital recording is stored as a file  To explain that audio can be changed through editing  To show that different types of audio can be combined and played together  To create a program in a text-based language  To use a digital device to collect data automatically  To explain that a data logger collects ‘data points’ from sensors over time  To use data collected over a long duration to find information  To identify the data needed to answer questions  To explain that digital images can be changed  To change the composition of an image  To describe how images can be changed for different uses  To make good choices when selecting different tools  To recognise that not all images are real  To evaluate how changes can improve an image | To contribute to a shared project online  To evaluate different ways of working together online  To recognise the features of an effective video  To identify that video can be improved through reshooting and editing  To consider the impact of the choices made when making and sharing a video  To use a form to record information  To explain that tools can be used to select specific data  To explain that computer programs can be used to compare data visually  To apply my knowledge of a database to ask and answer real-world questions  To identify that drawing tools can be used to produce different outcomes  To create a vector drawing by combining shapes  To use tools to achieve a desired effect  To recognise that vector drawings consist of layers  To group objects to make them easier to work with | To identify how to use a search engine  To describe how search engines select results  To explain how search results are ranked  To recognise why the order of results is important, and to whom  To recognise how we communicate using technology  To evaluate different methods of online communication  To recognise the need to preview pages  To outline the need for a navigation path  To recognise the implications of linking to content owned by other people  To explain that formula can be used to produce calculated data  To apply formulas to data, including duplicating  To create a spreadsheet to plan an event  To choose suitable ways to present data  To use a computer to create and manipulate three-dimensional (3D) digital objects  To compare working digitally with 2D and 3D graphics  To construct a digital 3D model of a physical object  To identify that physical objects can be broken down into a collection of 3D shapes  To design a digital model by combining 3D objects  To develop and improve a digital 3D model |
| **Safety & Security** | To create rules for using technology responsibly | To recognise the uses and features of information technology  To show how to use information technology safely  To 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 real  To capture video using a digital device | To consider the ownership and use of images (copyright) |