

Computing Progression

By the end of Year 6 children will:

- be responsible, competent, confident and creative users of information and communication technology
- appreciate how to be respectful and responsible online; recognise acceptable/unacceptable behaviour and know ways to report concerns about content and contact
- appreciate how search engines work and evaluate digital content for suitability
- understand that computer networks provide multiple services and opportunities for communication and collaboration
- apply knowledge of information technology to new and unfamiliar technologies to solve problems
- understand and apply the fundamental principles and concepts of computer science (abstraction, logic, algorithms, data representation, sequence, selection and repetition in programs) when designing and writing programs
- use computational language when analysing a problem, breaking the problem down into smaller parts (decompose) to correct errors (debug)
- know how to select, use and combine a variety of software on a range of digital devices to collect, analyse, evaluate and present data and information

EYFS: Computing is embedded throughout the whole of the curriculum

Examples:

- Use toy phones/cameras/computers within children's play
- Turn technological devices on and off
- Complete a simple programme on a device such as an iPad or a computer
- Draw information from computers to support children's learning

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Bee-bots, Google	Scratch Jnr, Cameras	Scratch, Google, i-Pads	Scratch, Google	Google, Stop motion studio	Python
Computing systems and networks	<ul style="list-style-type: none"> Use computers more purposefully Log in and navigate around a computer Drag, drop, click and control a cursor using a mouse Use software tools to create art on the computer 	<ul style="list-style-type: none"> Name some computer peripherals and their function. Recognise that buttons cause effects. Explain that technology follows instructions. Recognise different forms of technology. Design an invention which includes inputs and outputs. Explain the role of computers in the world around them. 	<ul style="list-style-type: none"> Recognise that a network is two or more devices connected and its purpose. Identify key components that make up the school's network. Explain the difference between wired and wireless connections. Recognise that files are saved on a server. Understand the role of the server in a network when requesting a website. Identify parts of a website's journey to reach your computer. Recognise that routers connect to send information. Understand that data is broken into packets. 	<ul style="list-style-type: none"> Understand the need to be thoughtful when working on a collaborative document. Use comments to suggest changes to a document and understand how to resolve comments. Use a variety of different slide styles to convey information including images and transitions. Create a Google Form with a range of different questions types that will provide different types of answers, e.g. text, multiple choice or numerical values. Export data to a spreadsheet, highlighting data, using conditional formatting and calculating averages and sums of numbers. 	<ul style="list-style-type: none"> Explain what a search engine is, suggesting several search engines to use and explain how to use them to find websites and information. Suggest that things online aren't always true and recognise what to check for. Explain why keywords are important and what TASK stands for, using these strategies to search effectively. Recognise the terms 'copyright' and 'fair use' and combine text and images in a poster. Make parallels between book searching and internet searching, explaining the role of web crawlers and recognising that results are rated to decide rank. 	<ul style="list-style-type: none"> Explain that codes can be used for a number of different reasons and decode messages. Explain how to ensure a password is secure and how this works. Create a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes. Explain the importance of historical figures and their contribution towards computer science. Present information about their historical figure in an interesting and engaging manner.
Programming	<ul style="list-style-type: none"> Explain what an algorithm is. Write clear algorithms. Follow an algorithm. Explain what inputs and outputs are. Create an achievable program. Decompose a design into steps. Identify bugs in an algorithm and how to fix them. 	<ul style="list-style-type: none"> Decompose a game to predict the algorithms. Give a definition for 'decomposition'. Write clear and precise algorithms. Create algorithms to solve problems. Use loops in their algorithms to make their code more efficient. Explain what abstraction is. 	<ul style="list-style-type: none"> Explain what some of the blocks do in Scratch. Explain what a loop is and include one in their program. Suggest possible additions to an existing program by remixing code. Recognise where something on screen is controlled by code. Use a systematic approach to find bugs. Understand the definitions of decomposition and algorithm and how they are used to create accurate code. 	<ul style="list-style-type: none"> Understand how to create a simple script in Scratch – be able to change sprite and prevent the sprite from rotating. Use decomposition to identify key features and understand how to decipher actions that make the quiz game work. Understand what a variable is and how to use the 'say' and 'ask' blocks. Create a variable and be able to use a variable to record a score. Understand what a variable is and how it 	<ul style="list-style-type: none"> Iterate ideas, testing and changing throughout the lesson. Explain what the basic commands do: 'play', 'sleep', '2.times do'. Explain how their program links to the theme. Include a loop in their work. Correct their own simple mistakes. Explain their scene in the story. Link musical concepts to their scene. Include a live loop and explain its function. Use samples effectively to enhance music. 	<ul style="list-style-type: none"> Iterate ideas, testing and changing throughout the lesson and explain what their program does. Use nested loops in their designs, explaining why they need two repeats. Alter the house drawing using Python commands; use comments to show a level of understanding around what their code does. Use loops in Python and explain what the parts of a loop do. Recognise that computers can choose random

				works within a program.	<ul style="list-style-type: none"> Code a piece of music that combines a variety of structures. Use loops in their programming. Recognise that programming music is a way to apply their skills. 	numbers; decompose the program into an algorithm and modify a program to personalise it.
Creating media	<ul style="list-style-type: none"> Plan a pictorial story using photographic images in sequence. Explain how to take clear photos. Take photos using a device. Edit photos by cropping, filtering and resizing. Search for and import images from the internet. Explain what to do if something makes them uncomfortable online. Organise images on the page, orientating where necessary. 	<ul style="list-style-type: none"> Create a flip book animation. Decompose a story into smaller parts to plan a stop motion animation. Create stop motion animations with small changes between images. 	<ul style="list-style-type: none"> Describe the purpose of a trailer. Create a storyboard for a book trailer. Consider camera angles when taking photos or videos. Import videos and photos into film editing software. Record sounds and add these to a video. Add text to a video. Incorporate transitions between images. Evaluate their own and others' trailers. 	<ul style="list-style-type: none"> Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website. Create a clear plan for their web page and begin to create it. Create a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. Create a clear plan by referring back to their checklist. Create four web pages with a range of features on their website. 	<ul style="list-style-type: none"> Create a toy with simple images with a single movement. Create a short stop motion with small changes between images. Think of a simple story idea for their animation then decompose it into smaller parts to create a storyboard with simple characters. Make small changes to the models to ensure a smooth animation and delete unnecessary frames. Add effects such as extending parts and titles. Provide helpful feedback to other groups about their animations. 	<ul style="list-style-type: none"> Explain how to record sounds and add in sound effects over the top. Produce a simple radio play with some special effects and simple edits which demonstrate an understanding of how to use the software. Create a document that includes correct date information and facts about the computers and how they made a difference. Demonstrate a clear understanding of their device and how it affected modern computers, including well-researched information with an understanding of the reliability of their sources. Describe all of the features that we'd expect a computer to have including RAM, ROM, hard drive and processor, but of a higher specification than currently available.
Data handling	<ul style="list-style-type: none"> Represent animal-themed data in different ways, using objects and technology. Log in and use mouse and keyboard skills to 	<ul style="list-style-type: none"> Describe and explain how astronauts' survival needs are met aboard the ISS. Identify and digitally draw items which fulfil basic human needs when aboard the ISS. 	<ul style="list-style-type: none"> Explain what is meant by 'field,' 'record,' and 'data.' Compare paper and computerised databases. Put values into a spreadsheet. 	<ul style="list-style-type: none"> Search the web efficiently to find temperatures of different cities and record this accurately. Design a weather station that gathers and records sensor 	<ul style="list-style-type: none"> Identify some of the types of data that the Mars Rover could collect (for example, photos). Explain how the Mars Rover transmits the data back to Earth 	<ul style="list-style-type: none"> Understand why barcodes and QR codes were created. Create (and scan) their own QR code using a QR code generator website.

	<p>navigate the computer.</p> <ul style="list-style-type: none"> • Represent the same data as a pictogram and a table or chart. • Collect data about minibeasts using a tally chart and represent their data digitally. • Click and drag objects to sort data using a branching database. • Consider the types of input that would be used to gather different forms of data when designing an invention. 	<ul style="list-style-type: none"> • Read the correct temperature on a thermometer. • Design a display showing everything that needs to be monitored by sensors on the ISS. • Create an algorithm that addresses all plants' needs. • Explain how space exploration can benefit life on Earth. • Read data to identify whether a planet might be habitable. 	<ul style="list-style-type: none"> • Sort, filter and interpret data in a spreadsheet. • Create a graph on Google Sheets. • Explain the purpose of visual representations of data. 	<p>data, explaining how it works and the units of measurement it would use.</p> <ul style="list-style-type: none"> • Design an automated machine that uses selection to respond to sensor data. • Search for and record weather forecast information in a spreadsheet and explain how this data is collected. • Create a video which includes weather forecast information. 	<p>and the challenges involved in this.</p> <ul style="list-style-type: none"> • Read any number in binary, up to eight bits. • Identify input, processing and output on the Mars Rovers. • Read binary numbers and grasp the concept of binary addition. • Relate binary signals (Boolean) to a simple character-based language, ASCII. 	<ul style="list-style-type: none"> • Explain how infrared can be used to transmit a Boolean type signal. • Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets. • Take real-time data and enter it effectively into a spreadsheet. • Presenting the data collected as an answer to a question. • Recognising the value of analysing real-time data. • Analyse and evaluate transport data and consider how this provides a useful service to commuters.
Online safety	<ul style="list-style-type: none"> • Discuss what the internet is and how it can be used. • Recognise that the internet may affect mood or emotions. • Recognise how internet use can affect and upset others. • Identify which information is appropriate to share and post online and which is not. 	<ul style="list-style-type: none"> • Explain what is meant by online information. • Recognise what information is safe to be shared online. • Explain why we need passwords and what makes a strong password. • Understand that they need to ask permission before sharing content online and explain why. • Understand that they have the right to deny their permission to information about them being shared online. • Say who they can ask for help with online worries. • Use some strategies to work out if online information is reliable or not. 	<ul style="list-style-type: none"> • Differentiate between fact, opinion and belief online. • Explain how to deal with upsetting online content. • Recognise that digital devices communicate with each other to share personal information. • Explain what social media platforms are used for. • Recognise why social media platforms are age-restricted. 	<ul style="list-style-type: none"> • Describe how to search over multiple platforms and are aware of the accuracy of the results presented. • Describe some of the methods used to persuade people to buy online. • Explain the difference between fact, opinion and belief and recognise these online. • Explain what a bot is and give examples of different bots. • Explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology. 	<ul style="list-style-type: none"> • Understand that passwords need to be strong and that apps require some form of passwords. • Recognise a couple of the different types of online communication and know who to go to if they need help with any communication matters online. • Search for simple information about a person, such as their birthday or key life moments. • Know what bullying is and that it can occur both online and in the real world. • Recognise when health and wellbeing are being affected in either a positive or negative way through online use. • Offer a couple of advice tips to combat the negative effects of online use. 	<ul style="list-style-type: none"> • Discuss a range of issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help. • Explain how sharing online can have both positive and negative impacts. • Be aware of how to seek consent from others before sharing material online and can describe how content can still be shared online even if it is set to private. • Explain what a 'digital reputation' is and what it can consist of. • Understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the

						<p>devices used at school.</p> <ul style="list-style-type: none">• Describe ways to manage passwords and strategies to add extra security such as two-factor authentication.• Explain what to do if passwords are shared, lost, or stolen.• Describe strategies to identify scams.• Explain ways to increase their privacy settings and understand why it is important to keep their software updated.