

## Three Peaks Primary Academy – Computing Overview

	Y1	Y2	Y3	Y4	Y5	Y6
1	Online Safety	Online Safety	Online Safety	Online Safety	Online Safety	Online Safety
2	<b>Getting Started</b> 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.	<b>What is a Computer?</b> Name some computer peripherals and their functions. 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.	<b>Networks and the Internet</b> Recognise that a network is two or more devices connected. Explain how information moves around a network and the role of the server. Understand that networks connect to the internet via a router. Explain some of the journey a website goes through to reach your computer. Explain that websites are split into small pieces (packets) to be sent via the internet.	<b>Collaborative Learning</b> 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.	<b>Search Engines</b> 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.	<b>Creating Media: History of Computers</b> 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.
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2	<b>Algorithms Unplugged</b> 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.	<b>Algorithms and Debugging</b> Decompose a game to predict 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.	<b>Programming : Scratch</b> 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. Recognise where something on screen is controlled by code. Use a systematic approach to find bugs. Explain what an algorithm is and its purpose.	Further Coding with Scratch 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 works within a program.	<b>Programming Music</b> Iterate ideas, testing and changing throughout the lesson. Explain what the basic commands 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 repeat and explain its function to enhance music. Code a piece of music that combines a variety of structures. Use loops in their programming. Recognise that programming music is	<b>Introduction to Python</b> 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
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					a way to apply their skills	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.
1	<b>Rocket to the Moon</b>	<b>Word Processing</b>	<b>Emailing</b>	<b>Online Safety</b>	<b>Online Safety</b>	<b>Online Safety</b>
2	Use a computer to make a list.	Explain which are the home row keys and how to find them for typing.	Explain what some of the blocks do in Scratch.	<b>Website Design</b>	<b>Stop Motion Animation</b>	<b>Big Data 1</b>
3	Explain the benefits of making a list on the computer.	Use the spacebar and backspace correctly.	Explain what a loop is and include one in their program.	Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website.	Create a toy with simple images with a single movement.	Understand why barcodes and QR codes were created.
4	Use a basic range of tools on graphic editing software to design a rocket.	Type and make simple alterations to text using buttons on the word processor.	Suggest possible additions to an existing program.	Create a clear plan for their web page and begin to create it.	Create a short stop motion with small changes between images.	Create (and scan) their own QR code using a QR code generator website.
5	Sequence instructions.	Search for, import and alter appropriate images for a text document.	Recognise where something on screen is controlled by code.	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.	Think of a simple story idea for their animation then decompose it into smaller parts to create a storyboard with simple characters.	Explain how infrared can be used to transmit a Boolean type signal.
6	Follow instructions to build their model rocket.	Modify text in a document.	Use a systematic approach to find bugs.	Create a clear plan by referring back to their checklist.	Make small changes to the models to ensure a smooth animation and delete unnecessary frames.	Explain how RFID works, recall a use of RFID chips, and type formulas into spreadsheets.
	Input data about the rockets into a table or spreadsheet.	Use copy and paste to copy text from one document to another.	Explain what an algorithm is and its purpose.	Create four web pages with a range of features on their website.	Add effects such as extending parts and titles.	Take real-time data and enter it effectively into a spreadsheet.
7	<b>Safer Internet Day</b>	<b>Safer Internet Day</b>	<b>Safer Internet Day</b>	<b>Safer Internet Day</b>	<b>Safer Internet Day</b>	<b>Safer Internet Day</b>
1	<b>Programming Beebots</b>	<b>Scratch Junior</b>	<b>Journey Inside a Computer</b>	<b>HTML</b>	<b>Microbit</b>	<b>Bletchley Park</b>
2	Recognise cause and effect when pressing buttons on a Bee-Bot.	Explore a new application independently.	Recognise inputs and outputs and that the computer sends and receives information.	Use most of the tabs (e.g. insert, pages, themes) on Google Sites on their website.	Clip blocks together and predict what will happen. Make connections with previous programming interfaces they've used, e.g. Scratch.	Explain that codes can be used for a number of different reasons and decode messages.
3	Discuss and demonstrate how Bee-Bot works.	Explain what the blocks on Scratch Jr do and use them for a purpose.	Explain that the parts of a laptop work together and the purpose of each part.	Create a clear plan for their web page and begin to create it.	Create their own images to make the animation and recognise the difference between 'on start' and 'forever'.	Explain how to ensure a password is secure and how this works.
5	Record video ensuring everyone is in the shot.	Recognise a loop in coding and why it is useful.	Explain what an algorithm is.	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.	Recognise the difference between 'on start' and 'forever'.	Create a simple website with information about Bletchley Park including the need to build electronic thinking machines to solve cipher codes.
5	Give a number of clear instructions in sequence.	Use a code to create an animation of an animal moving.	Suggest what memory is for inside a computer.	Create a clear plan by referring back to their checklist.	Recognise blocks they've used previously, identifying inputs and outputs used and make predictions about how variables work.	Explain the importance of historical figures and their contribution towards computer science.
	Program a Bee-Bot to reach a destination.	Use code to follow and create algorithm.	Make comparisons between different types of computer.	Create four web pages with a range of features on their website.	Choose appropriate blocks to complete the program and attempt the challenges independently.	Present information about their historical figure in an interesting and engaging manner.
	Identify and correct mistakes in their programming.	Program code to run 'on tap'.				
		Explain the role of the blocks in a program they have created.				

					Break a program down into smaller steps, suggesting appropriate blocks and match the algorithm to the program.	
1	Online Safety	Online Safety	Online Safety	Online Safety	Online Safety	Online Safety
2	<b>Introducing Data</b> Represent animal-themed data in different ways, using objects and technology. Log in and use mouse and keyboard skills to navigate the computer. Represent the same data as a pictogram and a table or chart. Collect data about minibeasts using a tally chart and represent the 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	<b>Stop Motion</b> 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.	<b>Digital Literacy</b> 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.	<b>Computational Thinking</b> Understand that problems can be solved more easily using computational thinking. Understand what the different code blocks do and create a simple game. Understand the terms 'pattern recognition' and 'abstraction' and how they help to solve a problem. Create a Scratch program which draws a square and at least one other shape. Understand how computational thinking can help to solve problems and apply computational thinking to problems they face.	<b>Mars Rover 1</b> 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 and the challenges involved in this. 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.	<b>Big Data 2</b> Recognise that data can become corrupted within a network and that data sent in packets is more robust, as well as identify the need to update devices and software. Recognise differences between mobile data and WiFi and use a spreadsheet to compare and identify high-use data activities and low-use data activities. Make links between the Internet of Things and Big Data and give a basic example of how data analysis/analytics can lead to improvement in town planning. Explain ways that Big Data or IoT principles could be used to solve a problem or improve efficiency within the school and prepare a presentation about their idea, considering the privacy of some data. Present their ideas about how Big Data/IoT can improve the school and provide feedback to others on their presentations.
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1	Online Safety	Online Safety	Online Safety	Investigating	Online Safety	Online Safety
2	<b>Digital Imagery</b> 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 feel uncomfortable online. Organise images on the page, orientating where necessary.	<b>International Space Station</b> 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. 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.	<b>Top Trumps Database</b> Explain what is meant by 'field,' 'record,' and 'data.' Compare paper and computerised databases. Put values into a spreadsheet. Sort, filter and interpret data in a spreadsheet. Create a graph on Google Sheets. Explain the purpose of visual representations of data.	<b>Weather</b> Search the web efficiently to find temperatures of different cities and record this accurately. Design a weather station that gathers and records sensor data, explaining how it works and the units of measurement it would use. 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.	<b>Mars Rover 2</b> Create a pixel picture, explaining that a pixel is the smallest element of a digital image and that binary is used to code and transfer this data. Save a JPEG as a bitmap and recognise the difference in file size as well as explaining how pixels are used to transfer image data. Explain the 'fetch, decode, execute' cycle in relation to real-world situations. Create a profile with a safe and suitable username and	<b>Inventing a Product</b> Evaluate code, understanding what it does and adapt existing to code for a specific purpose. Debug programs and make them more efficient using sequence, selection, repetition or variables. Design appropriate housing for their product using CAD software, including any input or output devices needed to make it work. Create an appealing website for their
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6		Online Safety		Online Safety		
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Outline of Online Safety, taught across the year						
	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6
	<p>Discuss what the internet is and how it can be used.</p> <p>Recognise that the internet may affect mood or emotions.</p> <p>Recognise how internet use can affect and upset others</p> <p>Identify which information is appropriate to share online and which is not.</p>	<p>Explain what is meant by online information. Recognise what information is safe to be shared online.</p> <p>Explain why we need passwords and what makes a strong password.</p> <p>Understand that they need to ask permission before sharing content online and explain why.</p> <p>Understand that they have the right to deny their permission to information about them being shared online.</p> <p>Say who they can ask for help with online worries.</p> <p>Use some strategies to work out if online information is reliable or not.</p>	<p>Differentiate between fact, opinion and belief online.</p> <p>Explain how to deal with upsetting online content.</p> <p>Recognise that digital devices communicate with each other to share personal information.</p> <p>Explain what social media platforms are used for.</p> <p>Recognise why social media platforms are age-restricted.</p> <p>Suggested prior learning</p>	<p>Describe how to search over multiple platforms and are aware of the accuracy of the results presented.</p> <p>Describe some of the methods used to persuade people to buy online.</p> <p>Explain the difference between fact, opinion and belief and recognise these online.</p> <p>Explain what a bot is and give examples of different bots.</p> <p>Explain some positive and negative distractions of using technology and small strategies on how to reduce the amount of time spent on technology.</p>	<p>Understand that passwords need to be strong and that apps require some form of passwords.</p> <p>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.</p> <p>Search for simple information about a person, such as their birthday or key life moments.</p> <p>Know what bullying is and that it can occur both online and in the real world.</p> <p>Recognise when health and wellbeing are being affected in either a positive or negative way through online use.</p> <p>Offer a couple of advice tips to combat the negative effects of online use.</p>	<p>Discuss a range of issues online that can leave pupils feeling sad, frightened, worried or uncomfortable and can describe numerous ways to get help.</p> <p>Explain how sharing online can have both positive and negative impacts.</p> <p>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.</p> <p>Explain what a 'digital reputation' is and what it can consist of.</p> <p>Understand the importance of capturing evidence of online bullying and can demonstrate some of these methods on the devices used at school.</p> <p>Describe ways to manage passwords and strategies to add extra security such as two-factor authentication.</p> <p>Explain what to do if passwords are shared, lost, or stolen.</p> <p>Describe strategies to identify scams.</p> <p>Explain ways to increase their privacy settings and understand why it is important to keep their software updated.</p>