



## Progress in Computing: Key Stage 2

At Ashton St Peter's Primary School, we acknowledge the rapid rate at which technology is developing and progressing; and it is important that we equip the children at our school to engage with this. Through explicit teaching of technological skills, knowledge and techniques, children will be enabled to understand and become active participants in a digital world. By making links with a range of curriculum subjects, such as Maths and Science, children will gain a firm understanding of the uses and possibilities of Computing. As a result of learning how digital systems work and how to put this knowledge to use through programming, children will be equipped to use information technology to create programs, systems and a range of content. Children will also be equipped to deal with and prevent potential dangers online through explicit and discrete teaching of e-safety. By combining the skills in these areas with their imagination, children will feel confident to develop and share their own ideas through a range of digital media. Making children aware of the wide variety of jobs and opportunities there are linked to Computing, will encourage children of any gender, ethnicity or background to engage with technology safely and purposefully within school and the wider world.

Skill	Year 3	Year 4	Year 5	Year 6
<b>E-safety</b>	<ul style="list-style-type: none"> <li>● Talk about what makes a secure password and why they are important.</li> <li>● Protect their personal information when they do different things online.</li> <li>● Recognise websites and games appropriate for their age.</li> <li>● Make good choices about how long I spend online.</li> <li>● Use the safety features of websites as well as reporting concerns to an adult. Post positive comments online.</li> <li>● Know to ask an adult before downloading files and games from the internet.</li> </ul>	<ul style="list-style-type: none"> <li>● Choose a secure password when using a website.</li> <li>● Choose websites and games that are appropriate for my age.</li> <li>● Know that anything they post online can be seen by others.</li> <li>● Help their friends make good choices about the time they spend online.</li> <li>● Talk about the ways they can protect themselves and their friends from harm online.</li> <li>● Use the safety features of websites as well as reporting concerns to an adult.</li> </ul>	<ul style="list-style-type: none"> <li>● Protect their password and other personal information.</li> <li>● Explain why I need to protect themselves and their friends and the best ways to do this, including reporting concerns to an adult.</li> <li>● Know that anything they post online can be seen, used and may affect others.</li> <li>● Talk about the dangers of spending too long online or playing a game.</li> <li>● Discuss the importance of choosing an age- appropriate website or game</li> <li>● Explain why they need to protect my computer or device from harm.</li> </ul>	<ul style="list-style-type: none"> <li>● Protect their password and other personal information.</li> <li>● Explain the consequences of sharing too much information about themselves online.</li> <li>● Support their friends to protect themselves and make good choices online, including reporting concerns to an adult.</li> <li>● Explain the consequences of spending too much time online or on a game.</li> <li>● Protect their computer or device from harm on the internet.</li> <li>● Explain the consequences to themselves and others of not</li> </ul>

		<ul style="list-style-type: none"> <li>● Talk about why they need to ask a trusted adult before downloading files and games from the internet.</li> <li>● Comment positively and respectfully online.</li> </ul>	<ul style="list-style-type: none"> <li>● Know which resources on the internet they can download and use.</li> <li>● Explain the importance of communicating kindly and respectfully.</li> </ul>	communicating kindly and respectfully.
<b>Computing systems and networks</b>	<ul style="list-style-type: none"> <li>● Explain how digital devices function.</li> <li>● Identify input and output devices.</li> <li>● Recognise how digital devices can change the way we work.</li> <li>● Explain how a computer network can be used to share information.</li> <li>● Explore how digital devices can be connected.</li> <li>● Recognise the physical components of a network.</li> </ul>	<ul style="list-style-type: none"> <li>● Describe how networks physically connect to other networks</li> <li>● Recognise how networked devices make up the internet.</li> <li>● Outline how websites can be shared via the World Wide Web.</li> <li>● Describe how content can be added and accessed on the World Wide Web.</li> <li>● Recognise how the content of the WWW is created by people.</li> <li>● Evaluate the consequences of unreliable content.</li> </ul>	<ul style="list-style-type: none"> <li>● Explain that computers can be connected together to form systems.</li> <li>● Recognise the role of computer systems in our lives.</li> <li>● Recognise how information is transferred over the internet.</li> <li>● Explain how sharing information online lets people in different places work together.</li> <li>● Contribute to a shared project online.</li> <li>● Evaluate different ways of working together online.</li> </ul>	<ul style="list-style-type: none"> <li>● Identify how to use a search engine.</li> <li>● Describe how search engines select results.</li> <li>● Explain how search results are ranked.</li> <li>● Recognise why the order of results is important, and to whom.</li> <li>● Recognise how we communicate using technology.</li> <li>● Evaluate different methods of online communication.</li> </ul>
<b>Creating Media</b>	<ul style="list-style-type: none"> <li>● Recognise how media can convey information</li> <li>● Recognise that the layout of a media can be edited.</li> <li>● Choose appropriate page settings.</li> <li>● Add content to a desktop publishing publication.</li> <li>● Consider how different layouts can suit different purposes.</li> <li>● Consider the benefits of desktop publishing.</li> </ul>	<ul style="list-style-type: none"> <li>● Explain that digital media can be changed.</li> <li>● Change the composition of a media.</li> <li>● Describe how media can be changed for different uses.</li> <li>● Make good choices when selecting different tools.</li> <li>● Recognise that not all images are real.</li> <li>● Evaluate how changes can improve a media.</li> </ul>	<ul style="list-style-type: none"> <li>● Identify that media tools can be used to produce different outcomes.</li> <li>● Create a vector drawing by combining shapes.</li> <li>● Use tools to achieve a desired effect.</li> <li>● Recognise that vector drawings consist of layers.</li> <li>● Group objects to make them easier to work with.</li> <li>● Evaluate their vector drawing.</li> </ul>	<ul style="list-style-type: none"> <li>● Review an existing use of media and consider its structure.</li> <li>● Plan the features of a particular media.</li> <li>● Consider the ownership and use of images (copyright).</li> <li>● Recognise the need to preview pages.</li> <li>● Outline the need for a navigation path.</li> <li>● Recognise the implications of linking to content owned by other people.</li> </ul>
<b>Data information</b>	<ul style="list-style-type: none"> <li>● Create questions with yes/no answers.</li> <li>● Identify the object attributes needed to collect relevant data.</li> <li>● Create a branching database.</li> <li>● Explain why it is helpful for a database to be well structured.</li> <li>● Identify objects using a branching database.</li> </ul>	<ul style="list-style-type: none"> <li>● Explain that data gathered over time can be used to answer questions.</li> <li>● Use a digital device to collect data automatically.</li> <li>● Explain that a data logger collects 'data points' from sensors over time.</li> </ul>	<ul style="list-style-type: none"> <li>● Use a form to record information.</li> <li>● Compare paper and computer-based databases.</li> <li>● Outline how grouping and then sorting data allows us to answer questions.</li> <li>● Explain that tools can be used to select specific data.</li> </ul>	<ul style="list-style-type: none"> <li>● Identify questions which can be answered using data.</li> <li>● Explain that objects can be described using data.</li> <li>● Explain that formulas can be used to produce calculated data.</li> <li>● Apply formulas to data, including duplicating.</li> </ul>

	<ul style="list-style-type: none"> <li>● Compare the information shown in a pictogram with a branching database.</li> </ul>	<ul style="list-style-type: none"> <li>● Use data collected over a long duration to find information.</li> <li>● Identify the data needed to answer questions.</li> <li>● Use collected data to answer questions.</li> </ul>	<ul style="list-style-type: none"> <li>● Explain that computer programs can be used to compare data visually.</li> <li>● Apply their knowledge of a database to ask and answer real-world questions.</li> </ul>	<ul style="list-style-type: none"> <li>● Create a spreadsheet to plan an event.</li> <li>● Choose suitable ways to present data.</li> </ul>
<b>Programming</b>	<ul style="list-style-type: none"> <li>● Write a computer program where different pieces of code execute in a particular sequence.</li> <li>● Create a program that uses sequences for two different objects moving on the screen.</li> <li>● Write code that uses a timer to create a sequence of events.</li> <li>● Write code that uses a timer to create a sequence</li> <li>● Use 'hit events' to program a maze game in which an object reacts to particular conditions.</li> <li>● Use conditional hit events to control the movement of a car on the screen</li> <li>● Make a simple game that uses conditional hit events to check if one object has hit another.</li> <li>● Program a simple game where conditional events are used to check whether objects have collided.</li> <li>● Use coding knowledge to fix some mistakes in a program.</li> </ul>	<ul style="list-style-type: none"> <li>● Understand how a variable can be used to keep track of the score in a game.</li> <li>● Use variables to keep track of the score in a game that uses conditional events</li> <li>● Use a variable to keep track of the score in a game that uses conditional events.</li> <li>● Learn how to use multiple different variables and to set the value of a variable</li> <li>● Use a variable to keep track of the score in a game where the score increases, decreases or resets when different conditions are met.</li> <li>● Use a loop to do something repeatedly in a program.</li> <li>● Write code that uses nested loops to create a program and design simple algorithms using loops and selection, i.e. if statements.</li> <li>● Write a code using the concepts of loops, regular or infinite repetition, and 'if statement' blocks.</li> <li>● Use loops, a variable and if statements to create an animated scene of objects performing a repeating pattern in the sky.</li> <li>● Use coding knowledge to fix the mistakes in a program.</li> </ul>	<ul style="list-style-type: none"> <li>● Set values in code to control the speed of an object.</li> <li>● Use object properties (speed, heading and angle) to create a driving simulation.</li> <li>● Create a game where an object's position on the screen is controlled by making changes to its co-ordinates</li> <li>● Write code including if statements to make an object rotate, and combine this with conditional events to make a game.</li> <li>● Set friction to affect the speed and movement of a car in a driving simulation.</li> <li>● Generate and display random numbers, and use these within the program for a game.</li> <li>● Write code for a game that uses random numbers to move objects in different directions.</li> <li>● Write code that uses random numbers to move objects at random speeds and headings, and use this to create a game.</li> <li>● Create a game, using random headings in specific ranges.</li> <li>● Use random numbers in combination with variables and conditional hit events to create a realistic game.</li> <li>● Use coding knowledge to fix the mistakes in a variety of programs.</li> </ul>	<ul style="list-style-type: none"> <li>● Write code that prompts the user to input the value of a variable, and use this to create an interactive block chart.</li> <li>● Use knowledge of variables to make a game that gets harder as users score more points.</li> <li>● Write the code for a shopping till using variables to store and calculate values.</li> <li>● Create a stopwatch with stop, start, and reset buttons, and both digital and analogue displays.</li> <li>● Create a game where players stop objects moving by changing their properties.</li> <li>● Write code that detects the properties of an object and passes the value of these properties (or a set of parameters) to other objects, and to use this to create a game.</li> <li>● Make a game that passes the speed and heading of the pointer's movement to an object on the screen</li> <li>● Make a game that moves objects around by getting information from events and passing object properties and pass properties from one object to a second in order to make the second object move relative to the first.</li> <li>● Create a game by writing code that accesses and uses object properties, including passing the</li> </ul>

				<p>value of these properties to other objects (passing a set of parameters).</p> <ul style="list-style-type: none"><li>• Use coding knowledge to quickly and confidently identify and fix the mistakes in a variety of programs.</li></ul>
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