

# St. Margaret's C.E. Junior School Progression of Skills & Knowledge in Computing

	Year 5 Concepts	Year 6 Concepts
Computer Systems & Networks	<b><u>Systems &amp; Searching</u></b> <ul style="list-style-type: none"> <li>Describe that a computer system features inputs, processes, and outputs</li> <li>Explain that computer systems communicate with other devices and built using a number of parts</li> <li>Know tasks that are managed by computer systems and human elements of a computer system</li> <li>Compare results from different search engines</li> <li>Use a web search to find specific information and refine a web search</li> <li>Recognise the role of web crawlers in creating an index</li> <li>Relate a search term to the search engine's index</li> <li>Know that a search engine follows rules to rank results</li> <li>Give examples of criteria used by search engines to rank results</li> <li>Describe some of the ways that search results can be influenced</li> <li>Explain how search engines make money</li> <li>Know some of the limitations of search engines</li> </ul>	<b><u>Communication and Collaboration</u></b> <ul style="list-style-type: none"> <li>Know computers use addresses to access websites</li> <li>Know that internet devices have addresses</li> <li>Know that data is transferred using agreed methods</li> <li>Know that all data transferred over the internet is in packets and identify the main parts</li> <li>Know data is transferred over networks in packets</li> <li>Explain that the internet allows different media to be shared</li> <li>Access shared files stored online and send information over the internet in different ways</li> <li>Know how the internet enables effective collaboration and can be public or private</li> <li>Choose methods of communication to suit particular purposes*</li> <li>Compare/use different methods of communicating on the internet*</li> <li>Know when and when not to share information online*</li> </ul>
Programming	<b><u>Selection in Physical Computing (Programming A)</u></b> <ul style="list-style-type: none"> <li>Create a simple circuit and connect it to a microcontroller</li> <li>Explain what an infinite loop does</li> <li>Program a microcontroller to make an LED switch on</li> <li>Design and use sequences that are count-controlled loops</li> <li>Design a conditional loop</li> <li>Know that a condition is either true or false</li> <li>Program a microcontroller to respond to an input</li> <li>Know that a condition being met can start an action</li> <li>Use selection (an 'if...then...' statement) to direct the flow of a program</li> <li>Describe what my project will do</li> <li>Know a real-world example of a condition starting an action</li> <li>Test and debug my project</li> <li>Use selection to produce an intended outcome</li> <li>Write an algorithm that describes what my model will do</li> </ul> <b><u>Selection In Quizzes (Programming B)</u></b> <ul style="list-style-type: none"> <li>Identify and modify conditions in a program</li> <li>Know how conditions are used in selection</li> <li>Create a program with different outcomes using selection</li> <li>Know the condition and outcomes in an 'if... then... else...' statement</li> <li>Use selection in an infinite loop to check a condition</li> <li>Explain how selection directs the flow of a program</li> <li>Design a project that uses selection</li> <li>Create and test a program which uses selection</li> <li>Identify how the project could be improved</li> </ul>	<b><u>Variables in games (Programming A)</u></b> <ul style="list-style-type: none"> <li>Know that the way a variable change can be defined</li> <li>Identify examples of information that is variable</li> <li>Identify that variables can hold numbers or letters</li> <li>Know a variable has a name and a value</li> <li>Identify a program variable as a placeholder in memory for a single value</li> <li>Recognise that the value of a variable can be changed</li> <li>Know where in a program to change a variable</li> <li>Use of an event in a program to set a variable</li> <li>Create algorithms for my project and explain my design choices</li> <li>Choose a name that identifies the role of a variable</li> <li>Test and debug the code</li> <li>Evaluate and extend project</li> </ul> <b><u>Sensing movement (Programming B)</u></b> <ul style="list-style-type: none"> <li>Apply my knowledge of programming to a new environment</li> <li>Test a program on an emulator - transfer to a controllable device</li> <li>Determine the flow of a program using selection</li> <li>Identify examples of conditions in the real world</li> <li>Use a variable in an if, then, else statement to select the flow of a program</li> <li>Know that checking a variable doesn't change its value</li> <li>Use a condition to change a variable</li> <li>Know the importance of the order of conditions in else, if statements</li> <li>Modify a program to achieve a different outcome</li> <li>Use an operand (e.g. &lt;=&gt;) in an if, then statement</li> <li>Design the algorithm for my project including variables</li> <li>Design the program flow for my project</li> <li>Create a program based on my design</li> <li>Test a program against the design</li> <li>Use a range of approaches to find and fix bugs</li> </ul>

Creating Media	<p><u>Introduction to Vector Graphics</u></p> <ul style="list-style-type: none"> <li>• Know how vector drawings are different from paper-based drawings</li> <li>• Recognise that vector drawings are made using shapes</li> <li>• Explain that each element added to a vector drawing is an object</li> <li>• Move, resize, and rotate objects I have duplicated use zoom tool for detail</li> <li>• Know how alignment grids and resize handles can be used to improve consistency</li> <li>• Use layering to create an image</li> <li>• Copy part of a drawing by duplicating several objects</li> <li>• Know when I need to group and ungroup objects</li> <li>• Reuse a group of objects to further develop my vector drawing</li> <li>• Compare vector drawings to freehand paint drawings</li> <li>• Create a vector drawing for a specific purpose</li> </ul>	<p><u>3D Modelling</u></p> <ul style="list-style-type: none"> <li>• Add 3D shapes to a project</li> <li>• Move 3D shapes relative to one another and view from different perspectives</li> <li>• Modify lift/lower, recolour and resize 3D objects</li> <li>• Duplicate, rotate and group 3D objects</li> <li>• Accurately size 3D objects</li> <li>• Combine a number of 3D objects</li> <li>• Use placeholders to create holes in 3D objects</li> <li>• Analyse a 3D model</li> <li>• Choose and combine objects to use in a 3D model</li> <li>• Construct a 3D model based on a design</li> <li>• Evaluate and modify 3D model to improve it</li> </ul> <p><u>Webpage Creation</u></p> <ul style="list-style-type: none"> <li>• Know that websites are written in HTML</li> <li>• Draw a web page layout that suits my purpose</li> <li>• Know the common features of a web page including media</li> <li>• Find and use copyright-free images</li> <li>• Understand copyright and 'fair-use'</li> <li>• Add content to a web page</li> <li>• Evaluate web page on different devices and suggest/make edits</li> <li>• Know what a navigation path is</li> <li>• Make multiple web pages and link them using hyperlinks</li> <li>• Create hyperlinks to link to other people's work</li> <li>• Evaluate the user experience of a website</li> <li>• Know the implication of linking to content owned by other</li> </ul>
Data& Information	<p><u>Flat-file Databases</u></p> <ul style="list-style-type: none"> <li>• Create a database using cards</li> <li>• Explain how information can be recorded</li> <li>• Order, sort, and group data cards</li> <li>• Know what a field is and a record is in a database</li> <li>• Navigate a flat-file database to compare different views of information</li> <li>• Combine grouping and sorting to answer specific questions</li> <li>• Know data can be grouped using chosen values and group information using a database</li> <li>• Use multiple criteria to answer a given question</li> <li>• Choose which field and value are required to answer a given question</li> <li>• Know how 'AND' and 'OR' can be used to refine data selection</li> <li>• Know the benefits of using a computer to create charts</li> <li>• Refine a chart by selecting a particular filter</li> <li>• Use a real-world database to answers questions</li> </ul>	<p><u>Spreadsheets</u></p> <ul style="list-style-type: none"> <li>• Enter data into a spreadsheet</li> <li>• Apply an appropriate format to a cell</li> <li>• Construct a formula in a spreadsheet</li> <li>• Know data types can be used in calculations</li> <li>• Know that changing inputs changes outputs</li> <li>• Apply a formula to multiple cells by duplicating it</li> <li>• Calculate data using different operations</li> <li>• Create a formula which includes a range of cells</li> <li>• Apply a formula to calculate the data I need to answer questions</li> <li>• Use a spreadsheet to answer questions</li> <li>• Create a chart</li> <li>• Identify when to use a table or chart</li> <li>• Use a chart to show the answer to questions</li> </ul>
Online Safety	<p><u>Online Reputation</u></p> <ul style="list-style-type: none"> <li>• Know what should and shouldn't be shared online</li> <li>• Know that the information I find online may not be accurate and that people make judgements based on this information</li> </ul> <p><u>Apps</u></p> <ul style="list-style-type: none"> <li>• Know what in-app purchasing is</li> <li>• Know the benefits and risks of in-app purchasing</li> </ul>	<p><u>Fake Profiles &amp; Online Relationships</u></p> <ul style="list-style-type: none"> <li>• Know how to report concerns and how I would support others</li> <li>• Know how sharing something online may have an impact either positively or negatively</li> <li>• Know impulsive and rash communications online may cause problems</li> <li>• Recognise issues online that might make me or others feel sad, worried, uncomfortable or frightened</li> <li>• Know that online others can pretend to be someone else including fake profiles</li> </ul>

