

Computing Systems and Networks

National Curriculum

Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content

Year 3	Year 4	Year 5	Year 6
<p>Describe what a computer is (input > process > output).</p> <p>Explain the difference between input and output devices on a computer.</p> <p>Explain how a computer network can be used to share information.</p> <p>Recognise the physical components of a network (switch, sever, wireless access point).</p> <p>Use a search engine to find simple information.</p> <p>Recognise that school computers are connected together in a network.</p>	<p>Describe how networks physically connect to other networks.</p> <p>Describe the internet as a network or networks.</p> <p>Describe how the world wide web is part of the internet and it contains websites and web pages.</p> <p>Describe how content can be added and accessed on the World Wide Web.</p> <p>Recognise how the content of the WWW is created and shared by people.</p> <p>Use a search engine to find specific information.</p> <p>Understand that search engines rank pages according to relevance.</p>	<p>Explain how sharing information online lets people in different places work together.</p> <p>Describe a computer system.</p> <p>Recognise the role of computer systems in our lives.</p> <p>Recognise that there is more than one search engine, and they may produce different results.</p> <p>Use a search engine effectively to find information and images.</p> <p>Know how to search for an application on a computer or tablet.</p> <p>I can explain that a search engine follows rules to rank results.</p>	<p>Use the advanced search tools when using a search engine to find specific information and images.</p> <p>Understand that search engines rank pages based on the number and quality of inbound links.</p> <p>Describe different ways people communicate online.</p> <p>Recognise a range of internet services e.g. email, Skype, Facetime, World Wide Web, and what they do.</p>

Presenting Information and Creating Multimedia

National Curriculum

Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals

Year 3 – Stop Frame Animation and Desktop Publishing	Year 4 – Desktop Publishing and Audio Production	Year 5 – Audio and Photo editing	Year 6 – Photo Editing and Video production
<p>Present ideas and information by combining media e.g. text & images.</p> <p>Design and create simple digital content for a purpose/ audience e.g. poster, video. Change font style, size and colour.</p> <p>Consider how different layouts can suit different purposes.</p> <p>Identify the use of desktop publishing in the real world.</p> <p>Edit digital content to improve it e.g. resize text.</p> <p>Understand how animation works.</p> <p>Plan an animation.</p> <p>Review and improve an animation.</p> <p>Add other media to an animation.</p>	<p>Collect, organise and present information using a range of media.</p> <p>Design and create digital content for a specific purpose e.g. poster, animation.</p> <p>Use the most appropriate tool for a particular purpose.</p> <p>Edit digital content to improve it based on feedback.</p> <p>Explain the benefits of using technology to present information.</p> <p>Press/tap buttons to start and stop recordings.</p> <p>Recognise recorded audio is stored as a file.</p> <p>Edit and alter recorded audio.</p> <p>Save/export an audio file.</p>	<p>Identify and use appropriate hardware and software to fulfil a specific task.</p> <p>Consider the audience when designing and creating digital content.</p> <p>Evaluate their own content and make improvements accordingly.</p> <p>Identify the features of a good video.</p> <p>Plan a video production using a story board.</p> <p>Use a computer to make a video.</p> <p>Make edits to a video to improve the outcome.</p> <p>Consider the impact of changes made on the quality of the video</p>	<p>Select, combine and remix a range of media to create original content.</p> <p>Consider all steps of the design process when creating content e.g. identifying problem, plan, create, evaluate, share).</p> <p>Identify the most effective tools to present information for a specific purpose.</p> <p>Evaluate existing digital content in terms of effectiveness and design.</p> <p>Consolidate previous learning from year 3 – 5.</p>

Data and Information

National Curriculum

Collecting, analysing, evaluating and presenting data and information

Year 3 – branching database	Year 4 – data logging	Year 5 – flat file database	Year 6 - spreadsheets
<p>Recognise charts, pictograms and databases and why we use them.</p> <p>Present information using a suitable chart.</p> <p>Create a branching database.</p> <p>Explore a database to find out information.</p> <p>Name the key parts of a database e,g, record, field, search,</p> <p>I can investigate questions with yes/no answers.</p> <p>I can make up a yes/no question about a collection of objects.</p> <p>Compare information shown in a pictogram with a branching database.</p>	<p>Recognise that a sensor can be used as an input device for data collection.</p> <p>I can use data from a sensor to answer a given question.</p> <p>I can interpret data that has been collected using a data logger.</p> <p>Use a computer program to collect a range of data.</p> <p>Use a computer program to sort data.</p> <p>Present data in a table, graph or in a chart.</p> <p>Draw conclusions stored in a database, chart or table.</p>	<p>Explain ‘fields’ and ‘records’</p> <p>Navigate a flat -file database</p> <p>Apply knowledge of a database to ask and answer real -world questions</p> <p>Design a structure for a flat -file database</p> <p>Choose tools to select and analyse data to answer questions Use ‘AND’ and ‘OR’ to refine data selection</p> <p>Select an appropriate graph to visually compare data</p>	<p>Recognise what a spreadsheet is and what it is used for.</p> <p>Create a spreadsheet for a purpose.</p> <p>Use simple formulae in a spreadsheet to find out information from a set of data.</p> <p>Collect data for a purpose and plan out a spreadsheet to present it effectively.</p> <p>Produce graphs from data in a spreadsheet to answer questions.</p> <p>Analyse and evaluate data and information in a spreadsheet, chart or database.</p> <p>Recognise that poor quality data leads to unreliable results.</p>

Programming and Algorithms

National Curriculum

Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Solve problems by decomposing them into smaller parts

Year 3 – Scratch	Year 4 – Scratch	Year 5 – Scratch and Microbit	Year 6 – Scratch and Microbit
<p>Explain what a sequence is.</p> <p>Create a sequence of commands using a block language to produce a given outcome – move, turn, point in direction, add sounds, backdrops.</p> <p>Modify a program e.g. change background, number of times things happen.</p> <p>Use an event block to start a program.</p> <p>Recognise and use a ‘forever’ loop in a program.</p> <p>Control multiple sprites in the same project.</p> <p>Test programmes and recognize when there is a bug in the sequence.</p> <p>Debug their programme.</p>	<p>Create a program using a range of events/inputs to control what happens.</p> <p>Use selection in algorithms in programs to alter what happens when a condition change e.g. if..then..</p> <p>Identify patterns (repetition) in a sequence</p> <p>Understand repetition in programming is also called looping</p> <p>Identify a loop in a program</p> <p>Understand, identify and justify when to use ‘infinite’ or ‘count - controlled’ loops</p> <p>Explain the importance in instruction order in a loop</p> <p>Debug errors in increasingly complex programs to accomplish specific goals</p> <p>Evaluate the effectiveness of a program.</p>	<p>Define that conditional statements (selection) are used in computer programs e.g. if.. then..</p> <p>Create and use simple variables e.g. to keep score.</p> <p>Explain a loop can stop when a condition is met (number of times or event)</p> <p>Evaluate a program and make improvement to the code.</p> <p>Name a range of sensors in physical systems e.g. microphone, temperature, light</p> <p>Create an algorithm for a physical system containing a sensor.</p>	<p>Design and program a physical computing system that uses sensors.</p> <p>Explain common errors in programs and how to fix them.</p> <p>Define ‘variable’ as something that is changeable.</p> <p>Explain that a variable has a name and a value.</p> <p>Identify a variable in an existing program.</p> <p>Use a variable in a conditional statement to control the flow of a program.</p> <p>Combine a variable with relational operators (< = >) to determine when a program changes e.g. if score > 5, say ‘well done.’</p>

Know where to save and open files (pcourwork).

Save files with appropriate names.

Use a keyboard effectively to type in text. Type with increased confidence and speed using age appropriate punctuation.

Use left, right and double click on the mouse/keypad.

Add an image to a document from the internet. Resize and move an image in a document.

Recognise that you can organise files using folders.

Explain what a good file name would look like.

Use key parts of a keyboard effectively e.g. shift, arrow keys, delete, return.

Know how to copy and paste text or images in a document.

Crop an image and apply simple filters.

Type using fingers on both hands.

Use common keyboard shortcuts e.g. ctrl C (copy) ctrl V (paste).

Use folders to organise files.

Know how to mute and unmute audio on a computer or tablet.

Type efficiently using both hands.

Use a range of keyboard shortcuts.

Organise files effectively using folders and file names.