

Carden Primary School curriculum overview for Computing

Computing will be taught using the 'Switched on Computing' scheme of work published by 'Rising Stars'. Computing will be taught discretely, but where appropriate it will be linked to the year group topic. *The scheme of work will be introduced gradually. Initially the children will carry out units of work from a lower year group. This will ensure that they have acquired the new skills, necessary to access the units from within their own year group.*

Here at Carden we have identified the key subject skills for computing that we believe are essential for children to experience and re-visit several times between years 1 and 6.

These skills for computing are:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems: solve problems by decomposing them into smaller parts.
- 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 detect and correct errors in algorithms and programs.
- Select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
- 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.
- Describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.

The tables below outline what will be taught in computing for each year group in each half term or term.

AUTUMN TERM					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>'We are treasure hunters' – using programmable toys. This unit will enable children to:</p>	<p>'We are astronauts' – programming on screen This unit will enable children to:</p>	<p>'We are communicators' – communicating safely on the internet. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop a basic understanding of how email works. ○ gain skills in using email. ○ be aware of broader issues surrounding email, including 'netiquette' and e-safety. ○ work collaboratively with a remote partner. ○ experience video conferencing. 	<p>'We are co-authors' – producing a wiki. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand the conventions for collaborative online work, particularly in wikis. ○ be aware of their responsibilities when editing other people's work. ○ become familiar with Wikipedia, including potential problems associated with its use. ○ practise research skills. ○ write for a target audience using a wiki tool. ○ develop collaboration skills. ○ develop proofreading skills. 	<p>'We are game developers' – developing an interactive game. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ create original artwork and sound for a game. ○ design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. ○ detect and correct errors in their computer game. ○ use iterative development techniques (making and testing a series of small changes) to improve their game. 	<p>'We are app planners' – planning the creation of a mobile app. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop an awareness of the capabilities of smartphones and tablets. ○ understand geolocation, including GPS. ○ identify interesting, solvable problems. ○ evaluate competing products. ○ pitch a proposal for a smartphone or tablet app.

<p>'We are TV chefs' – filming a recipe. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ break down a process into simple, clear steps, as in an algorithm. ○ use different features of a video camera. ○ use a video camera to capture moving images. ○ develop collaboration skills. ○ discuss their work and think about how it could be improved. 	<p>'We are games testers' – exploring how computer games work. This unit will enable children to:</p>	<p>'We are presenters' – videoing performance. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. ○ edit video, including adding narration and editing clips by setting in/out points. ○ understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length. 	<p>'We are toy makers' – creating an interactive toy. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ design and make an on-screen prototype of a computer-controlled toy. ○ understand different forms of input and output (such as sensors, switches, motors, lights and speakers). ○ design, write and debug the control and monitoring program for their toy. 	<p>'We are artists' – creating geometrical art. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop an appreciation of the links between geometry and art. ○ become familiar with the tools and techniques of a vector graphics package. ○ develop an understanding of turtle graphics. ○ experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate and receive feedback from their peers. ○ develop some awareness of computer generated art, in particular fractal-based landscapes. 	<p>'We are project managers' – developing project management skills. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ scope a project to identify different components that must be successfully combined. ○ identify their existing talents and plan how they can develop further knowledge and skills. ○ identify component tasks of a project and develop a timeline to track progress. ○ identify the resources they'll need to accomplish a project. ○ use web-based research skills to source tools, content and other resources. ○ consider collaborative strategies to ensure the quality of a collaborative project.
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SPRING TERM

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>'We are painters' – illustrating a book. This unit will enable children to:</p>	<p>'We are photographers' – taking, selecting and editing digital images. This unit will enable children to:</p>	<p>'We are opinion pollsters' – collecting and analysing data. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand some elements of survey design ○ understand some ethical and legal aspects of online data collection. ○ use the web to facilitate data collection. ○ gain skills in using charts to analyse data. ○ gain skills in interpreting data. 	<p>'We are meteorologists' – recording and analysing the weather. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand different measurement techniques for weather, both analogue and digital. ○ use computer-based data logging to automate the recording of some weather data. ○ use spreadsheets to create charts. ○ analyse data, explore inconsistencies in data and make predictions. ○ practise using presentation software and, optionally, video. 	<p>'We are web developers' – creating an e-safety website. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop their research skills to decide what information is appropriate. ○ understand some elements of how search engines select and rank results. ○ question the plausibility and quality of information. ○ develop and refine their ideas and text collaboratively ○ develop their understanding of e-safety and responsible use of technology. 	<p>'We are market researchers' – researching the app market. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ create a good set of survey questions. ○ analyse the data obtained from a survey. ○ work collaboratively to plan questions. ○ conduct an interview or focus group. ○ analyse and interpret the information obtained from interviews or a focus group. ○ present their research findings.

<p>'We are collectors' – finding images using the Web This unit will enable children to:</p>	<p>'We are researchers' – researching a topic. This unit will enable children to:</p>	<p>'We are programmers' – programming an animation. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ create an algorithm for an animated scene in the form of a storyboard. ○ write a program in 'Scratch' to create the animation. ○ correct mistakes in their animation programs. 	<p>'We are musicians' – producing digital music. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ use one or more programs to edit music. ○ create and develop a musical composition, refining their ideas through reflection and discussion. ○ develop collaboration skills. ○ develop an awareness of how their composition can enhance work on other media. 	<p>'We are bloggers' – creating and writing a blog page. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ become familiar with blogs as a medium and genre of writing. ○ create a sequence of blog posts on a theme. ○ incorporate additional media. ○ comment on the posts of others. ○ develop a critical, reflective view of a range of media, including text. 	<p>'We are interface designers' – designing an interface for an app. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ work collaboratively to design the app's interface. ○ use wireframing tools to create a design prototype of their app. ○ develop or source the individual interface components (media assets) they will use. ○ address accessibility and inclusion issues. ○ document their design decisions and the process they've followed.
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SUMMER TERM

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>'We are storytellers' – producing a talking book. This unit will enable children to:</p>	<p>'We are detectives' – communicating clues. This unit will enable children to:</p>	<p>'We are bug fixers' – finding and correcting bugs in programs. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop a number of strategies for finding errors in programs ○ build up resilience and strategies for problem solving. ○ increase their knowledge and understanding of 'Scratch.' ○ recognise a number of common types of bug in software. 	<p>'We are software designers' – developing a simple educational game. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ develop an educational computer game using selection and repetition. ○ understand and use variables. ○ start to debug computer programs. ○ recognise the importance of user interface design, including consideration of input and output. 	<p>'We are architects' – creating a virtual space. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand the work of architects, designers and engineers in 3D. ○ develop familiarity with a simple CAD (computer aided design) tool. ○ develop spatial awareness by exploring and experimenting with a 3D virtual environment. ○ develop greater aesthetic awareness. 	<p>'We are mobile app developers' – developing a simple mobile phone app. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ become familiar with another programming toolkit or development platform. ○ import existing media assets to their project. ○ write down the algorithms for their app. ○ program, debug, and refine the code for their app. ○ thoroughly test and evaluate their app.

<p>'We are celebrating' – creating a card electronically. This unit will enable children to:</p>	<p>'We are zoologists' – recording bug hunt data. This unit will enable children to:</p>	<p>'We are network engineers' – exploring computer networks, including the internet. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand the physical hardware connections necessary for computer networks to work. ○ understand some features of internet protocols. ○ understand some diagnostic tools for investigating network connections. ○ develop a basic understanding of how domain names are converted to IP addresses. 	<p>'We are html editors' – editing and writing html. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ understand some technical aspects of how the internet makes the web possible. ○ use HTML tags for elementary mark up. ○ use hyperlinks to connect ideas and sources. ○ code up a simple web page with useful content. ○ understand some of the risks in using the web. 	<p>'We are cryptographers' – cracking codes. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ be familiar with semaphore and Morse code. ○ understand the need for private information to be encrypted. ○ encrypt and decrypt messages in simple ciphers. ○ appreciate the need to use complex passwords and to keep them safe. ○ have some understanding of how encryption works on the web. 	<p>'We are marketers' – creating a video and web copy for a mobile phone app. This unit will enable children to:</p> <ul style="list-style-type: none"> ○ consider key marketing messages, including identifying a unique selling point. ○ develop a printed flyer or brochure incorporating text and images. ○ further develop knowledge, skills and understanding in relation to creating a website. ○ further develop skills relating to shooting and editing video.
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