Coads Green Primary

Computing Knowledge and Skills Organiser

Purpose of Study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, SMSC and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. This knowledge and skills organiser for computing demonstrates the progression through the year groups. It includes regular opportunities to revisit prior learning and build upon this.

At Coads Green, we use the elements of the Rising Stars Computing/Online Safety programme, as well as Just2Easy, to support our teaching and learning in Computing.

Capabilities Curriculum

The Capabilities Curriculum is a creative curriculum which measures social and emotional capabilities which improve children's learning, valuing the development of the whole child and preparing them for the future.
An Daras Trust have chosen to adopt a curriculum framework informed by pupil's social and emotional well-being. The class capability scores are used to inform a teachers approach to the lesson, which will help growth in these valuable characteristics.
These capabilities are evidenced as being necessary for future success, and by measuring them we are placing real value on them.
There are 7 capability strands: Managing feelings, Confidence, Communication, Relationships and Leadership, Planning and Problem-Solving, Creativity, Resilience and Determination.

Diversity: we have carefully planned our curriculum to include diversity (gender, disability, BAME – Black, Asian and Minority Ethnic) to ensure it is a diverse and inclusive curriculum.

Visible Learning (metacognition)

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Metacognition describes the processes involved when learners plan, monitor, evaluate and make changes to their own learning – the thinking about their thinking. Pupils are given opportunity to understand their own cognitive abilities, knowledge of tasks and strategies that could be used to support their learning. Pupils are also encouraged to self-reflect. The following questions will be used to deepen pupils understanding of their learning:						
Visible Learning	**Surface Learning Strategies**		**Deep Learning Strategies**		**Transfer Learning Strategies**	
	Can I plan and organise me learning before I start? *Where am I with my learning?* *How well have I achieved my success criteria?* *What is my next step?* *Can I use feedback to help me?*		*Can I explain my learning to someone else?* *Can I explain the strategies I have used in my learning?* *Can I ask a range of questions to deepen my understanding?*		*Can I organise my knowledge to support new learning?* *Do I look for and recognise similarities and differences in my tasks?* *When have I applied my learning to another area?* *Can I apply my learning to another context?*	
Computing	**Term**		**Term**		**Term**	
EYFS	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	30 – 50 Months		40 – 60 Months		Early Learning Goal (ELG)	
Knowledge	**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *To know how simple equipment operates.* ▪ *To show an interest in technological toys with knobs or pulleys, or real objects.* ▪ *To understand that some toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.* ▪ *To know that information can be retrieved from computers.*		**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *To understand how to program a simple program on a computer.*		**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *To understand that a range of technology is used in places such as homes and schools.* ▪ *To understand that technology can be used for particular purposes.*	
Skill Progression	**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *Know how to operate simple equipment.* ▪ *Show an interest in technological toys with knobs or pulleys, or real objects.* ▪ *Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.*		**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *Program a simple program on a computer.* ▪ *Interact with age-appropriate computer software.*		**<u>Understanding The World</u>** **<u>Technology</u>** ▪ *Recognise that a range of technology is used in places such as homes and schools.* ▪ *Select and use technology for particular purposes.*	
Metacognition	**Planning**		**Monitoring**		**Evaluation**	

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	What resources do I need to carry out my task? *Can I describe what I am going to do?* *How can I link my learning with my own experiences to help me?*		*Am I doing well?*		*How did I do?* *Am I able to re-tell stories and link them to other areas of learning?*	
Class 1 **Cycle A**	**Autumn 1** **DIGITAL LITERACY**	**Autumn 2** **INFO TECH**	**Spring 1** **INFO TECH**	**Spring 2** **COMPUTER SCIENCE**	**Summer 1** **DIGITAL LITERACY**	**Summer 2** **COMPUTER SCIENCE**
Concept And Knowledge	**Unit 1 - Word Processing** All about Me-Learning to Type ▪ *Creating a digital document* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	**Unit 2 - Research and Publishing** Using search engines to research ▪ *Finding images on the web* **Computing PoS/NC:** ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content	**Unit 3 - Data Collection and Analysis** Simple databases ▪ *Making Pictograms* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	**Unit 4 - Programmable Robots** BeeBot ▪ *Using programmable toys* **Computing PoS/NC:** ▪ Understand what algorithms are, how they are implemented as programs on digital devices and the programmes execute by following precise and unambiguous instructions ▪ Create and debug simple programs ▪ Use logical reasoning to predict the behaviour of simple programmes ▪ Recognise common uses of info tech beyond school	**Unit 5 - Digital Art** Create images ▪ *Illustrating an e-book* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of information technology beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	**Unit 6 - Code programming/debugging** Outer Space- Simple algorithms Traditional tales- Debugging ▪ *Filming the steps of a recipe* **Computing PoS/NC:** ▪ Understand what algorithms are, how they are implemented as programs on digital devices and the programmes execute by following precise and unambiguous instructions ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school

		▪ Recognise common uses of info tech beyond school				▪ Use logical reasoning to predict the behaviour of simple programmes
Skills Progression	▪ *Develop basic keyboard skills through typing and formatting text* ▪ *Develop basic mouse skills* ▪ *Develop skills in storing and retrieving files* ▪ *Develop skills in combining text and images* ▪ *Discuss their work and think about how it could be improved*	▪ *Find and use pictures on the web* ▪ *Know what they need to do if they encounter pictures that cause concern* ▪ *Group images on the basis of a binary (yes/no) question* ▪ *Organise images into more than two groups according to clear rules* ▪ *Sort images according to criteria* ▪ *Ask and answer binary (yes/no) questions about their images*	▪ *Use sound recording equipment to record sound* ▪ *Develop skills in saving and storing sounds on an IT device* ▪ *Develop collaboration skills as they work together as a group* ▪ *Talk about and reflect on their use of IT* ▪ *Share recordings with an audience* ▪ *Collect data using tick charts or tally charts* ▪ *Use simple charting software to produce pictograms and other basic charts*	▪ *Understand that a programmable toy can be controlled by inputting a sequence of instructions* ▪ *Develop and record sequences of instructions as an algorithm* ▪ *Program the toy to follow their algorithm* ▪ *Debug their programmes* ▪ *Predict how their algorithms will work*	▪ *Use the web safely to find ideas for an illustration* ▪ *Select and use appropriate painting tools to create and change images on the computer* ▪ *Understand how this use of IT differs from using paint and paper* ▪ *Create an illustration for a particular purpose* ▪ *Know how to save, retrieve and change their work* ▪ *Reflect on their work and act on feedback received*	▪ *Break down a process into simple clear steps, as in an algorithm* ▪ *Use different features of a video camera* ▪ *Use video camera to capture moving images* ▪ *Develop collaboration skills* ▪ *Discuss their work and think about how it could be improved*
On-line Safety Skills	▪ *Understand that rules help us stay safe both in the real world and online* ▪ *Sugest strategies for staying safe online* ▪ *Develop a set of on-line safety rules that are easily understood for KS1 pupils*	▪ *Understand that unkind on-line behaviour can affect others, even though we can't always see them* ▪ *Understand that on-line safety rules can be applied to different on-line situations*	▪ *Understand that using computer type devices too often can be bad for us and that 'technology time out' is a positive thing* ▪ *Discuss what to do if they see/hear something on-line which upsets them*	▪ *Understand what is meant by personal information* ▪ *Recognise that anyone on-line who we don't know is in real life a stranger* ▪ *Understand how we can protect our personal information -*	▪ *Understand how to be responsible, respectful and safe online* ▪ *Understand that the way technology is used is as important as good online behaviour*	▪ *Understand the importance of playing games in shared spaces where a trusted adult is available for support* ▪ *Understand the importance of taking breaks away from games*

				reporting worries to trusted adults		
Resource	Software – J2E Write, MS PowerPoint, Word, Clicker 7 Apps – Pages/Keynote, Brushes Redux, Sketchbook Express	Software – J2E Vote, Web browser, Microsoft PowerPoint or IWB Software Apps – Web Browser, Keynote or Explain Everything	Software – J2E Data, MS Excel, Google Sheets, Picasa, Photo Gallery, Google My Maps, Google Earth Apps – Numbers/Google Sheets, Snapseed, RunKeeper	Beebot, App I-pad Beebot App I-pad Software – Scratch, Kodu, Snap!	Software – J2E 5, Picasa, Pixlr Apps – Phots (iOS), Snapseed	Software – Scratch, Screencast-o-matic, open source games, Snap!, MS paint, Microsoft Windows Live Movie Maker, iMovie for OS X, J2E Code Apps – Pyonkee free game apps, Lightbot
Class 1 Cycle B	**Autumn 1 DIGITAL LITERACY**	**Autumn 2 INFO TECH**	**Spring 1 INFO TECH**	**Spring 2 COMPUTER SCIENCE**	**Summer 1 DIGITAL LITERACY**	**Summer 2 COMPUTER SCIENCE**
Concept And Knowledge	**Unit 1 - Word Processing** All about me- Developing typing skills ▪ *Creating, editing and formatting text in emails* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support	**Unit 2 - Research and Publishing** Using search engines for research. Ask a question and publish. ▪ *Researching a topic* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school ▪ Understand what algorithms are, how they are implemented as programs on digital devices and the	**Unit 3 - Data Collection and Analysis** Making bar charts ▪ *Collecting data or sounds relating to a group of things e.g. bugs for analysis* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of info tech beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when	**Unit 4 - Programmable Robots** BeeBot ▪ *Programming on screen* **Computing PoS/NC:** ▪ Understand what algorithms are, how they are implemented as programs on digital devices and the programmes execute by following precise and unambiguous instructions ▪ Create and debug simple programs ▪ Use logical reasoning to predict the behaviour of simple programmes	**Unit 5 - Digital Art** Animate ▪ *Taking better photographs* **Computing PoS/NC:** ▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content ▪ Recognise common uses of information technology beyond school ▪ Use technology safely and respectfully, keeping private information private; identify where to go for help and support when they have	**Unit 6 - Code programming and debugging** Rockets – create simple algorithms *Exploring how a computer game works* **Computing PoS/NC:** ▪ Understand what algorithms are, how they are implemented as programs on digital devices and the programmes execute by following precise and unambiguous instructions ▪ Use technology purposefully to create, organise, store, manipulate

	when they have concerns about content or contact on the internet or other online technologies	programmes execute by following precise and unambiguous instructions	they have concerns about content or contact on the internet or other online technologies.	▪ Recognise common uses of info tech beyond school	concerns about content or contact on the internet or other online technologies.	and retrieve digital content ▪ Use logical reasoning to predict the behaviour of simple programmes
Skill Progression	▪ *Understand that email can be used to communicate* ▪ *Develop skills in opening, composing and sending email* ▪ *Gain skills in opening and listening to audio files* ▪ *Use appropriate language in email* ▪ *Develop skills in editing and formatting text in emails* ▪ *Be aware of online safety issues when using emails*	▪ *Develop collaboration skills through working as part of a group* ▪ *Develop research skills through searching for information on net* ▪ *Improve note taking skills through the use of mind mapping* ▪ *Develop presentation skills - creating and delivering a short multi-media presentation*	▪ *Sort and classify a group of items by answering questions* ▪ *Collect data using tick charts or tally charts* ▪ *Use simple charting software to produce pictograms and other basic charts* ▪ *Share findings with an audience*	▪ *Have a clear understanding of algorithms as sequences of instructions* ▪ *Convert simple algorithms to programs* ▪ *Predict what a simple program will do* ▪ *Spot and fix (debug) errors in their programmes*	▪ *Consider the technical and artistic merits of photographs* ▪ *Use a digital camera or camera app* ▪ *Take digital photographs* ▪ *Review and reject or rate the images they take* ▪ *Edit and enhance their photographs* ▪ *Select their best images to include in a shared portfolio*	▪ *Describe carefully what happens in a computer game* ▪ *Use logical reasoning to make predictions of what a program will do* ▪ *Test these predictions* ▪ *Think critically about computer games and their use* ▪ *Be aware of how to use games safely and in balance with other activities*
On-line Safety Skills	▪ *Consider on-line safety scenarios encountered at KS1 – at school and at home and how they may need to adapt any online safety rules they know about* ▪ *Consider - strategies they might use on-line*	▪ *Begin to understand the concept of 'on-line' bullying and the role of the bystander* ▪ *Develop an understanding of the consequences of on-line bullying*	▪ *Review basic principles of how search engines work* ▪ *Revise and use the Key Steps for searching the web safely*	▪ *Demonstrate how we can protect personal information on-line* ▪ *Recognise the difference between strong and weak password*	▪ *Understand how the way we use technology may impact on the people around us* ▪ *Review practical responses to incidents of poor behaviour on-line*	▪ *Understand and recognise that the PEGI age system is useful for helping people decide what games/apps are appropriate and safe* ▪ *Understand what to do if someone nearby is playing a game*

	if usual trusted adult is not available					*which is inappropriate*
Resource	Software – J2E Write, MS PowerPoint, Word, Clicker 7, MS Excel, School Email system, Google Sheets Apps – Pages/Keynote, Brushes Redux, Sketchbook Express	Software – J2E Vote, Web browser, MS PowerPoint or IWB Software, FreeMind, Google Custom Search, Apps – Web Browser, Keynote or Explain Everything, iThoughts HD, Safari, Popplet Lite	Software – J2E Data, MS Excel, Google Sheets, Picasa, Photo Gallery, Google My Maps, Google Earth Apps – Numbers/Google Sheets, Snapseed, RunKeeper	Beebot App I-pad Software – Scratch, Kodu, Snap! Apps – Hopscotch, Daisy the Dinosaur, Pyonkee, Blue Bot.	Software – Picasa, Pixlr Apps – Phots (iOS), Snapseed	Software – J2E Code, Scratch, Screencast-o-matic, Web based open source games, Snap!. Micro-Soft paint, Microsoft Windows Live Movie Maker, iMovie Apps – Pyonkee free game apps, Lightbot
Metacognition	**Planning** *What resources do I need to carry out my task?* *Have I done anything like this before?* *How can I link my learning with my own experiences to help me?*		**Monitoring** *Am I doing well?* *Do I need any different techniques to improve my learning/task?*		**Evaluation** *Am I able to re-tell stories and link them to other areas of learning?* *How did I do in my task?*	
Class 2 Cycle A	**Autumn 1 DIGITAL LITERACY**	**Autumn 2 INFO TECH**	**Spring 1 INFO TECH**	**Spring 2 COMPUTER SCIENCE**	**Summer 1 DIGITAL LITERACY**	**Summer 2 COMPUTER SCIENCE**
Concept And Knowledge	**Unit 1 - Word Processing** All about me – combining text and images ▪ *Communicating safely on the internet* **Computing PoS/NC:** ▪ Understand computer networks including the internet and how they can provide multiple services such as the WWW and the opportunities and they offer for	**Unit 2 - Research and Publishing** Publish a project and leave comments ▪ *Making and sharing a short screencast presentation* **Computing PoS/NC:** ▪ Understand computer networks including the internet and how they can provide multiple services such as the WWW	**Unit 3 - Data Collection and Analysis** Branching databases ▪ *Collecting and analysing data* **Computing PoS/NC:** ▪ 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	**Unit 4 - Programmable Robots** Espresso coding – inputs and sequencing ▪ *Programming an animation* **Computing PoS/NC:** ▪ Design, write and debug programs that accomplish specific goals, solve problems by decomposing them into smaller parts ▪ Use sequence in programs; work with	**Unit 5 – Digital Art** Take photos and edit ▪ *Videoing performance* **Computing PoS/NC:** ▪ 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, including	**Unit 6 – Code programming and debugging** Pacman/How to catch a spider – Block coding and adding conditions ▪ *Finding and correcting bugs in programs* **Computing PoS/NC:** ▪ Debug programs that accomplish specific goals ▪ Use sequence, selection, and

	communication and collaboration ▪ 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, including collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	and the opportunities and they offer for communication and collaboration ▪ Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content ▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content and accomplish given goals including collecting, analysing, evaluating and presenting information	goals, including collecting, analysing, evaluating and presenting data and information ▪ Understand computer networks including the internet and the opportunities they offer for communication and collaboration ▪ Work with variables and various forms of input and output ▪ Use logical reasoning to explain how some simple algorithms work ▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	variables and various forms of input and output ▪ Use sequence, selection, and repetition in programs;' work with variables and various forms of input and output ▪ Select, use and combine a variety of software to design and create content that accomplishes given goals including presenting information	collecting, analysing, evaluating and presenting data and information ▪ Use sequence, selection, and repetition in programs;' work with variables and various forms of input and output ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour ▪ Understand computer networks including the internet and the opportunities they offer for communication and collaboration ▪ Be discerning in evaluating digital content	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
Skill Progression	▪ *Develop a better understanding of how email works* ▪ *Gain skills in using email*	▪ *Use a search engine to learn about a new topic* ▪ *Plan, design and deliver an interesting and*	▪ *Understand some elements of survey design* ▪ *Understand some ethical and legal*	▪ *Create an algorithm for an animated scene in the form of a storyboard*	▪ *Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing*	▪ *Develop a number of strategies for finding errors in programs* ▪ *Build up resilience and strategies for problem solving*

	▪ *Be aware of broader issues surrounding email including 'netiquette' and online safety* ▪ *Work collaboratively with a remote partner* ▪ *Experience video conferencing*	*engaging presentation* ▪ *Search for and evaluate on-line images* ▪ *Create your own original images* ▪ *Create a video slide-cast of a narrated presentation* ▪ *Develop understanding of how the internet, the web and search engines work*	*aspects of online data collection* ▪ *Use the web to facilitate data collection* ▪ *Gain skills in using charts to analyse data* ▪ *Gain skills in interpreting results.*	▪ *Write a program in Scratch to crate the animation* ▪ *Correct mistakes in their animation programs.*	▪ *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*	▪ *Increase knowledge and understanding of Scratch* ▪ *Recognise a number of common types of bug in software*
On-Line Safety Skills	▪ *Review on-line safety rules covered at KS1* ▪ *Consider what on-line safety rules may need changing now they are using on-line resources at home and school more suitable for their age*	▪ *Recall that any information or pictures shared on-line cannot always be controlled* ▪ *Understand that peer pressure can be both a positive and a negative influence*	▪ *Use clues to make choices about which web pages they consider most useful and trustworthy* ▪ *Understand that not all links are safe or trustworthy* ▪ *Understand the different ways to report concerns about on-line behaviour*	▪ *Understand that every time we use the internet we leave a digital trail that can be found, copied, shared and broadcast* ▪ *Understand that the things we upload onto the internet last forever*	▪ *Understand that good online behaviour is important for making the internet an enjoyable place for everyone* ▪ *Understand that email is a widely used form of digital communication that lasts forever and can be shared*	▪ *Understand that internet identities are actively constructed by the user* ▪ *Understand that internet identities can be misleading or not representative of the creator* ▪ *Recall that personal information should not be shared by anyone on-line who we don't know*
Resource	Software – J2E Write, School Email system, video conferencing Software – Skype or MS Teams, presentation	Software – Google, search engines, MS PowerPoint, Google Presentation, Screencast-O-matic,	Software – J2E Data, Web browser, Google Forms, Google Sheets, Google Slides, MS Excel, MS Word, FreeMind	Software – Scratch, Snap!, MS PowerPoint, Tux paint, Scratch Jnr Apps - Pyonkee	I-Pad/Digital cameras Recording devices Software – MS Windows Movie Maker, iMovie, Isle of Tune, Audacity, GarageBand, MuseScore,	Software – J2E Code, Scratch, Snap!, Screencast-O-matic Apps – Snap! Pyonkee

	software, Learning Platform with wiki tools Apps – Facetime, Teams, Skype, web browser – safari or Wikipedia app	Quick-time player, Firefox Brackets, Apps – Safari, Explain Everything, Adobe Voice, Koder	Apps – Google Drive, Safari, Weather Station by Netatmo, Weather Station UK, Numbers, Keynote, Explain Everything		SoundBox, Kinovea, Dartfish Apps – iMovie, Coach's Eye, Isle of Tune, GarageBand	
Class 2 Cycle B	**Autumn 1 DIGITAL LITERACY**	**Autumn 2 INFO TECH**	**Spring 1 INFO TECH**	**Spring 2 COMPUTER SCIENCE**	**Summer 1 DIGITAL LITERACY**	**Summer 2 COMPUTER SCIENCE**
Concept And Knowledge	**Unit 1 - Word Processing** Information Text ▪ *Producing a wiki* **Computing PoS/NC:** ▪ 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, including collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report	**Unit 2 - Research and Publishing** Use search engines to research a project and publish ▪ *Editing and writing HTML* **Computing PoS/NC:** ▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of content and accomplish given goals including collecting, analysing, evaluating and presenting information ▪ Use technology safely and responsibly recognise	**Unit 3 - Data Collection and Analysis** Branching databases and creating databases ▪ *Presenting the Weather* **Computing PoS/NC:** ▪ Understand computer networks including the internet and the opportunities they offer for communication and collaboration ▪ Work with variables and various forms of input and output ▪ Use logical reasoning to explain how some simple algorithms work ▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	**Unit 4 - Programmable Robots** Espresso coding ▪ *Developing a simple educational game* **Computing PoS/NC:** ▪ Use sequence in programs; work with variables and various forms of input and output ▪ 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 ▪ Select, use and combine a variety of	**Unit 5 – Digital Art/Media** Making music on Garageband ▪ *Producing digital music* **Computing PoS/NC:** ▪ 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, including collecting, analysing, evaluating and presenting data and information ▪ Use sequence, selection, and repetition in programs;' work with variables and various	**Unit 6 – Code programming and debugging** Outer Space – using coordinates in coding ▪ *Proto-typing an interactive toy* **Computing PoS/NC:** ▪ Debug programs that accomplish specific goals ▪ 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

	concerns about content and contact ▪ Solve problems by decomposing them into smaller parts ▪ Use search technologies effectively	acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact		software to design and create content that accomplishes given goals including presenting information	forms of input and output ▪ Understand computer networks including the internet and the opportunities they offer for communication and collaboration ▪ Be discerning in evaluating digital content	
Skill Progression	▪ *Understand the conventions for collaborative on-liner 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* ▪ *Practice research skills* ▪ *Write for a target audience using a wiki tool* ▪ *Develop collaboration skills* ▪ *Develop proof-reading skills*	▪ *Understand some technical aspects of how the internet makes the web possible* ▪ *Use HTLML 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*	▪ *Understand different measurement techniques for weather – both analogue and digital* ▪ *Use computer-based logging to automate the recording of some weather data* ▪ *Use spreadsheets to create charts* ▪ *Analyse data, explore inconsistencies in data and make predictions* ▪ *Practice using presentation software and optionally video.*	▪ *Develop an educational computer game using selection and repletion* ▪ *Understand and use variables* ▪ *Start to debug computer programs* ▪ *Recognise the importance of your interface design, including consideration on input and output*	▪ *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 in other media*	▪ *Design and make an on-screen proto-type 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*

On-Line Safety Skills	▪ *Consider what new strategies they can apply to on-line safety scenarios beyond talking to a trusted adult*	▪ *Understand that access to the internet is the not the same for everyone* ▪ *Recall ways to report concerns and inappropriate om-line behaviour by others*	▪ *Understand that because of the interne information can be spread more quickly and reach more people now than at any time in the past* ▪ *Understand that although info on the internet may not always be true or accurate it last forever*	▪ *Understand the risks involved in clicking on and opening links on suspicious websites and in emails* ▪ *Understand that hacking can be illegal and has consequences for the hacker* ▪ *Demonstrate an awareness of viruses and what to do if they think their account has been compromised*	▪ *Understand that both digital rights and responsibilities are important to ensure the internet is an enjoyable place for all* ▪ *Understand that there are consequences for knowingly ignoring rights* ▪ *Develop a positive and responsible attitude towards technology and internet use*	▪ *Understand that virtual friends are still strangers that they do not know* ▪ *Apply their knowledge of on-line safety to decide what info they as virtual friends can safely share on-line* ▪ *Recap rules for reporting suspicious or uncomfortable on-line situations*
Resource	Software – J2E Write, School Email system, video conferencing Software – Skype or MS Teams, presentation software, Learning Platform with wiki tools Apps – Facetime, Teams, Skype, web browser – safari or Wikipedia app	Software – Google, creative commons search engines, MS PowerPoint, Google Presentation, Screencast-O-matic, Quick-time player, Firefox Brackets, Apps – Safari, Explain Everything, Adobe Voice, Koder	Software – J2E Data, Web browser, Google Forms, Google Sheets, Google Slides, MS Excel, MS Word, FreeMind Apps – Google Drive, Safari, Weather Station by Netatmo, Weather Station UK, Numbers, Keynote, Explain Everything	Software – Scratch, Snap!, MS PowerPoint, Tux paint, Scratch Jnr Apps - Pyonkee	I-Pad/Digital cameras Recording devices Software – MS Windows Movie Maker, iMovie, Isle of Tune, Audacity, GarageBand, MuseScore, SoundBox, Kinovea, Dartfish Apps – iMovie, Coach's Eye, Isle of Tune, GarageBand	Software – J2E Code, Scratch, Snap!, Screencast-O-matic Apps – Snap! Pyonkee
Metacognition	**Planning**		**Monitoring**		**Evaluation**	
	What resources do I need to carry out my task? *Where do I start and what strategies will I use?* *What type of resources will I need to complete my learning?* *Have I got everything I need to complete my task?*		*Do I need any different techniques to improve my understanding of the process?* *Am I finding this challenging?* *Do I need to re-read information to make it clearer?* *Do I need to change my strategy?*		*Did I use the right strategy?* *How did the feedback I received help me?* *For future tasks, would I use another strategy?*	

Coads Green Primary

Computing Knowledge and Skills Organiser

	How can I break down the task into smaller steps to make my learning more manageable?					
Class 3 Cycle A	**Autumn 1 DIGITAL LITERACY**	**Autumn 2 INFO TECH**	**Spring 1 INFO TECH**	**Spring 2 COMPUTER SCIENCE**	**Summer 1 DIGITAL LITERACY**	**Summer 2 COMPUTER SCIENCE**
Concept And Knowledge	**Unit 1 - Word Processing Information Text** Information leaflet ▪ *Writing non-fiction report with animated images* **Computing PoS/NC:** ▪ Understand computer networks including the internet and how they can provide multiple services such as the WWW and the opportunities and they offer for communication and collaboration ▪ 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, including collecting, analysing,	**Unit 2 - Research and Publishing** Research a project, create a visual report and publish ▪ *Creating a website about cyber-safety* **Computing PoS/NC:** ▪ Understand computer networks including the internet and how they can provide multiple services such as the WWW and the opportunities and they offer for communication and collaboration ▪ Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content	**Unit 3 - Data Collection and Analysis** Creating databases ▪ *Creating a virtual space* **Computing PoS/NC:** ▪ Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content ▪ 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, including collecting, analysing, evaluating and presenting data and information ▪ Understand computer networks including the internet and how they	**Unit 4 - Programmable Games** Programme a robot to answer questions ▪ *Use variables to programme a robot* **Computing PoS/NC:** ▪ 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 to detect and correct errors in algorithms and programs	**Unit 5 – Digital Art** Stop motion animation? ▪ *Create video using photography* **Computing PoS/NC:** ▪ 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 ▪ 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, including	**Unit 6 – Code programming and debugging** Programme a game Programme a game ▪ *Developing an interactive game* **Computing PoS/NC:** ▪ 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 to detect and correct errors in

	evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact ▪ Be discerning in evaluating digital content	▪ 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, including collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	can provide multiple services such as the WWW and the opportunities and they offer for communication and collaboration ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact ▪ recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	▪ 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.	collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact ▪ Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content	algorithms and programs ▪ 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. ▪
Skill Progression	▪ *Become familiar with blogs as a medium and genre of writing* ▪ *Create a sequence of blog posts on a theme* ▪ *Incorporate additional media*	▪ *Develop their research skills to decide what information is appropriate* ▪ *Understand some elements of how*	▪ *Be familiar with semaphore and Morse code* ▪ *Understand the need for private information to be encrypted*	▪ *Create original artwork and sound for a game* ▪ *Design and create a computer program for a computer game which uses sequence,*	▪ *Develop an appreciation of the links between geometry and art* ▪ *Become familiar with the tools and*	▪ *Understand the work of architects, designers and engineers working in 3D*

	▪ *Comment on the posts of others* ▪ *Develop a critical, reflective view of a range of media including text*	*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 on-line safety and responsible use of technology*	▪ *Encrypt and decrypt messages in simple ciphers* ▪ *Appreciate the need to use complex passwords and to keep them secure* ▪ *Have some understanding of how encryption works on the web*	*selection, repetition and variable**s*** ▪ *Detect and correct errors in their computer game* ▪ *Use iterative development techniques (making and testing a series of small changes to improve their game*	*techniques of vector graphics package* ▪ *Develop an understanding of turtle graphics* ▪ *Experiment with tools refining and developing their own work as they apply their own criteria to evaluate it and receive feedback from their peers* ▪ *Develop some awareness of computer-generated art, in particular fractal-based landscapes*	▪ *Develop familiarity with a simple CAD tool* ▪ *Develop spatial awareness by exploring and experimenting with a 3D virtual environment* ▪ *Develop greater aesthetic awareness*
On-line Safety Skills	▪ *Consider what new on-line safety strategies they can apply in a range of scenarios – e.g. such as clicking the CEOP 'Report Abuse' button* ▪ *Formulate updated on-line safety rules so they are appropriate and easy to understand for upper KS2 pupils*	▪ *Recognise that on-line behaviour can have a real-life negative effect on other people* ▪ *Understand that we must take responsibility for our own actions on-line, regardless of what other people are doing* ▪ *Critically assess info surrounding an on-line safety scenario and decide if it*	▪ *Understand that some people get paid to endorse products on-line* ▪ *Appreciate the value of trusted adults in helping them reach an informed conclusion* ▪ *Develop a discerning attitude to on-line content so that they can confidently reach their own conclusions*	▪ *Understand that posting inappropriate info on-line can cause regret later* ▪ *Understand how to manage their on-line reputation* ▪ *Understand that it is possible to search the internet for information about particular individuals*	▪ *Understand that copyright laws exist to protect original content creators* ▪ *Understand that content they choose to use or upload on the internet maybe subject to copyright laws* ▪ *Further develop their understanding of rights and responsibilities as digital citizens*	▪ *Understand different business models for on-line games* ▪ *Understand that accounts for devices are linked to real life bank accounts* ▪ *Understand that some features in on-line games and apps cost real money* ▪ *Understand that research, parental controls and device settings are tools we*

		constitutes on-line bullying				*can use to help us game confidently*
Resource	Software – J2E Write, MS Publisher, Scribus, iBook Author, Pixlr, MS Word, Google Docs, Adobe Acrobat, Google Drive, WordPress, Blogger, MS Movie Maker, Audacity Apps – Pages, Book Creator, Snapseed, Google Drive, WordPress, Camera	Software – J2E 5, Google, Bing, Google Sites, Wiki Tool, WordPress, Adobe Slate, Google Maps, Google Earth, Pixlr Apps – Google Search App, iMovie, GarageBand	Software – J2E Data, Scratch 2.0, Snap!, The Black Chamber (website) Apps – Pyonkee and Snap! Using Safari	Microbit? Software – Scratch, Snap! or Kodu, Python Apps – Pyonkee, Pythonista or Python 3.4 for IOS	Software – MS Movie Maker, iMovie, Inkscape, Adobe Illustrator, CorelDraw, Scratch, Snap! Apps – iMovie, Pyonkee, i-logo	Software – J2E Code, Trimble SketchUp, Screencast-O-matic, Minecraft Apps – Home Design 3D, SketchUp viewer
Class 3 Cycle B	**Autumn 1 DIGITAL LITERACY**	**Autumn 2 INFO TECH**	**Spring 1 INFO TECH**	**Spring 2 COMPUTER SCIENCE**	**Summer 1 DIGITAL LITERACY**	**Summer 2 COMPUTER SCIENCE**
Concept and Knowledge	**Unit 1 - Word Processing Information Text** Advert for a product ▪ *Use mixed media to create an advert* **Computing PoS/NC:** ▪ 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, including collecting, analysing, evaluating and	**Unit 2 - Research and Publishing** Research a project, create a visual report and publish ▪ *Using media and mapping to document a trip* **Computing PoS/NC:** ▪ Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content ▪ Select, use and combine a variety	**Unit 3 - Data Collection and Analysis** Creating databases ▪ *Mastering algorithms for searching, sorting and mathematics* ▪ *Exploring computer networks including the internet* **Computing PoS/NC:** ▪ 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, including	**Unit 4 - Programmable Games** Programme a game ▪ *Create a game using Microbit* **Computing PoS/NC:** ▪ 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	**Unit 5 – Digital Art** Video Editing incl. green screening ▪ *Create a short news report* **Computing PoS/NC:** ▪ Use logical reasoning to explain how some simple algorithms work and to 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 design and create a range of	**Unit 6 – Code programming and debugging** Planet game ▪ *Use variables to create a game* **Computing PoS/NC:** ▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of

	presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact ▪ Be discerning in evaluating digital content	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, including collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	collecting, analysing, evaluating and presenting data and information ▪ Understand computer networks including the internet and how they can provide multiple services such as the WWW and the opportunities and they offer for communication and collaboration ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	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 ▪ 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.	programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information ▪ Use technology safely and responsibly recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	ways to report concerns about content and contact ▪ Design, write and debug programs that accomplish specific goals ▪ Use sequence, selection and repetition in programs; work with variables and various forms of input and output ▪
Skill Progression	▪ *Manage or contribute to large collaborative projects* ▪ *Write and review content* ▪ *Source digital media while demonstrating safe, respectful and responsible use*	▪ *Research a location on-line using a range of resources appropriately* ▪ *Understand the safe use of mobile technology including GPS*	▪ *Develop the ability to reason logically about algorithms* ▪ *Understand how some key algorithms can be expressed as programs* ▪ *Understand how some algorithms are more*	▪ *Learn some of the syntax of a text based-based programming language* ▪ *Use commands to display text on screen accept typed user input, sore and retrieve*	▪ *Think critically about how video is used to promote a cause* ▪ *Storyboard an effective advert for a cause* ▪ *Work collaboratively to shoot suitable original footage and*	▪ *Appreciate that computer networks transmit and receive information digitally* ▪ *Understand the basic hardware needed for computer networks to work*

	▪ *Design and produce a high-quality print document*	▪ *Capture images, audio and video while on location* ▪ *Showcase shared media content through a mapping layer*	*efficient than others for the same problem* ▪ *Understand common algorithms for sorting and searching* ▪ *Appreciate algorithmic approaches to problems in mathematics*	*data using variables and select from a list* ▪ *Plan a text-based adventure with multiple rooms and user interaction* ▪ *Thoroughly debug the programme*	*source additional content, acknowledging intellectual property rights*	▪ *Understand key features of internet communication protocols* ▪ *Develop a basic understanding of how domain names are converted to numerical IP addresses*
On-line Safety Skills	▪ *Review and edit their on-line safety guidelines around all technology use – including mobile devices* ▪ *Review on-line scenarios where using reporting buttons is a sensible strategy*	▪ *Understand the negative consequences of sharing 'nude or inappropriate selfies'* ▪ *Understand that an image posted online stays online forever* ▪ *Understand that sending, sharing and storing images of under-18s is a crime* ▪ *Develop confidence in saying no when they are posed with a request for inappropriate or indecent images of themselves*	▪ *Understand that most on-line sites and apps require an account holder to be a minimum of 13 years of age* ▪ *Understand they should adhere to the age restrictions of the site or app* ▪ *Understand why age restrictions apply to on-line communication tools* ▪ *Learn how to use appropriate social networking sites safely*	▪ *Understand that everyone has the right to privacy* ▪ *Understand that they need to be mindful of protecting other people's personal information online* ▪ *Consider situations where they must be mindful of the privacy preferences of others* ▪ *Create a permission pledge for their family*	▪ *Revisit the key concepts of being a safe digital citizen* ▪ *Develop confidence in their ability to act appropriately when confronted with unfamiliar situations involving technology, on-line gaming and the wider internet*	▪ *Understand the risks involved with on-line gaming including exposure to inappropriate content, grooming, bullying and the use of bribery tactics* ▪ *Understand that research and parental controls and device settings are tools we can use to help us game safely and confidently* ▪ *Consolidate everything they have learnt about age appropriate on-line gaming in prep for transition to KS3*
Resource	Software – J2E Write, MS Publisher, Scribus, iBook Author, Pixlr, MS Word, Google Docs, Adobe	Software – J2E 5, Google, Bing, Google Sites, Wiki Tool, WordPress, Adobe	Software – J2E Data, Scratch 2.0, Snap!, The Black Chamber (website)	Microbit? Software – Scratch, Snap! or Kodu, Python	Software – MS Movie Maker, iMovie, Inkscape, Adobe Illustrator, CorelDraw, Scratch, Snap!	Software – J2E Code, Trimble SketchUp, Screencast-O-matic, Minecraft

	Acrobat, Google Drive, WordPress, Blogger, MS Movie Maker, Audacity Apps – Pages, Book Creator, Snapseed, Google Drive, WordPress, Camera	Slate, Google Maps, Google Earth, Pixlr Apps – Google Search App, iMovie, GarageBand	Apps – Pyonkee and Snap! Using Safari	Apps – Pyonkee, Pythonista or Python 3.4 for IOS	Apps – iMovie, Pyonkee, i-logo	Apps – Home Design 3D, SketchUp viewer
Metacognition	**Planning**		**Monitoring**		**Evaluation**	
	What resources do I need to carry out my task? *Where do I start and what strategies will I use?* *What type of resources and materials will I need to complete my learning?* *How can I break down the task into smaller steps?*		*Am I finding this challenging?* *Is there anything I need to stop and change to improve the understanding of my learning?* *Do I need to re-read information to make it clearer?* *Do I need to change my strategies?*		*Did I use the right strategy?* *How did the feedback I received help me?* *For future tasks, would I use another strategy?* *Did I pace myself appropriately to get the task done?*	