Knowledge Organisers for the priority subject for each concept to be issued 2-3 weeks before the learning block is taught.
Metacognition: Metacognition can take many forms; it includes knowledge about when and how to use particular strategies for learning or problem-solving.

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 Windmill Hill Academy, we use the Rising Stars Computing and Online Safety programme, as well as Just2Easy, to support our teaching and learning in Computing.

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. Where there are key links, these are highlighted below in orange.

Computing	Term		Term		Term	
Year 1	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Concept	**Rebellion and Invasion**	**Natural elements**	**Civilisation**	**Environmental**	**Discoveries**	**Culture**

Knowledge	Creativity: We are painters (Illustrating an eBook)	Productivity: We are celebrating (Creating a card digitally)	Computer Network: We are collectors (Finding images using the web)	Communication and Collaboration: We are story tellers (Producing a talking book)	Programming: We are treasure hunters (Using programmable toys)	Computational Thinking: We are TV chefs (Filming the steps of a recipe)
	▪ *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 ICT 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.* **Online safety: We are Year 1 rule writers (Creating rules that help us stay safe online)**	*Revisit learning from Autumn 1* ▪ *Understand the basics of using a keyboard.* ▪ *Understand the basics of using a mouse.* ▪ *Know that the web can be used to find and select images.* **Online safety: We are kind and thoughtful (Understanding the impact of our behaviour on others)** ▪ *Understand that unkind behaviour online can affect other people, even though we can't see them.* ▪ *Understand that the rules created in* *Autumn 1 (revisiting*	*Revisit learning from Autumn 1 and 2* ▪ *Understand that the web can be used to find and use pictures.* ▪ *Know what to do if they encounter pictures that cause concern.* ▪ *Understand how to group, organise and sort images.* **Online safety: We are responsible internet and device users (Remembering to take time out from technology)** *Revisit learning from Autumn 2* ▪ Learn the very basic principles of what the internet is. ▪ Understand how people use the internet. ▪ Understand that using computer devices too often can be bad for us	*Revisit learning from Autumn and Spring 1* ▪ *Understand how a talking book differs from a paper-based book.* **Online safety: We are information protectors (Understanding what is meant by personal information)** *Revisit learning from Autumn 1* ▪ *Understand what is meant by 'personal information'.* ▪ *Recognise that anyone online who we don't know in real life is a stranger.* ▪ *Understand how we can protect our personal information, including reporting worries to trusted adults.*	▪ *Understand that a programmable toy can be controlled by inputting a sequence of instructions.* **Online safety: We are good digital citizens (Finding out what it means to be a good digital citizen)** *Revisit learning from Spring 2* ▪ *Understand what is meant by 'digital citizen'.* ▪ *Understand how to be responsible, respectful and safe online.* ▪ *Understand that being a good digital citizen means having a kind heart, a warning tummy and a thinking brain; all things that keep us safe online.*	*Revisit learning from Summer 1* ▪ *Understand that a process needs to be broken down into simple, clear steps, as in an algorithm.* ▪ *Understand the different features of a video camera.* **Online Safety: We are responsible gamers (Learning how to stay safe when playing online games)** *Revisit learning from Spring 1* ▪ *Understand the importance of playing games in shared spaces where grown-ups are available for support.* ▪ *Understand the importance of taking breaks*

	▪ *Understand that rules help us stay safe, both in the real world and online.*	*learning) can be applied to any concerns they may have about their online activities.*	*and we should take time out form technology to do other things.*			*away from technology.*
Skill Progression	**Creativity: We are painters (Illustrating an eBook)** ▪ *Use the web safely to find ideas for an illustration.* ▪ *Select and use appropriate painting tools to create and change images on the computer.* ▪ *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.* **Online safety: We are Year 1 rule writers**	**Productivity: We are celebrating (Creating a card digitally)** <mark>*Revisit learning from Autumn 1*</mark> ▪ *Develop basic keyboard skills, through typing and formatting text.* ▪ *Develop basic mouse skills.* ▪ *Use the web to find and select images.* ▪ *Develop skills in storing and retrieving files.* ▪ *Develop skills in combining text and images.* ▪ *Discuss their work and think about whether it could be improved.*	**Computer Network: We are collectors (Finding images using the web)** <mark>*Revisit learning from Autumn 1 and 2*</mark> ▪ *Find and use pictures on the web.* ▪ *Group images on the basis of a binary (yes/no) question.* ▪ *Organise images into more than two groups according to clear rules.* ▪ *Sort (order) images according to some criteria.* ▪ *Ask and answer binary (yes/no) questions about their images.* **Online safety: We are responsible internet and device users (Remembering**	**Collaboration: We are story tellers (Producing a talking book)** <mark>*Revisit learning from Autumn and Spring 1*</mark> ▪ *Use sound recording equipment to record sounds.* ▪ *Develop skills in saving and storing sounds on the computer.* ▪ *Develop collaboration skills as they work together in a group.* ▪ *Talk about and reflect on their use of ICT.* ▪ *Share recordings with an audience.* **Online safety: We are information protectors (Understanding what is**	**Programming: We are treasure hunters (Using programmable toys)** ▪ *Develop and record sequences of instructions as an algorithm.* ▪ *Program the toy to follow their algorithm.* ▪ *Debug their programs.* ▪ *Predict how their programs will work.* **Online safety: We are good digital citizens (Finding out what it means to be a good digital citizen)** <mark>*Revisit learning from Spring 2*</mark> ▪ *Recall what to do if something happens online that makes them feel*	**Computational Thinking: We are TV chefs (Filming the steps of a recipe)** <mark>*Revisit learning from Summer 1*</mark> ▪ *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.* **Online Safety: We are responsible gamers**

An Daras Trust — *Igniting Curiosity Growing Capabilities*

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(Creating rules that help us stay safe online) ▪ *Suggest strategies for staying safe in different online scenarios.* ▪ *Help to develop a set of online safety rules that are easily understood and appropriate for Year 1.*	**Online safety: We are kind and thoughtful (Understanding the impact of our behaviour on others)** ▪ *Follow the rules created in* ==Autumn 1 (revisiting learning)== *to any concerns they may have about their online activities.*	**to take time out from technology)** ==Revisit learning from Autumn 2== ▪ *Discuss what to do if they see or hear something online that upsets them.*	**meant by personal information)** ==Revisit learning from Autumn 1== ▪ *Demonstrate how we can protect our personal information, including reporting worries to trusted adults.*	*uncomfortable – building on previous unit (Spring 2).*	**(Learning how to stay safe when playing online games)** ==Revisit learning from Spring 1== ▪ *Demonstrate the importance of playing games in shared spaces where grown-ups are available for support.*
Meta Cognition					
Year 2	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Concept	Rebellion and Invasion	Natural elements	Civilisation	Environmental	Discoveries	Culture
Knowledge	**Computer Networks: We are researchers (Researching a topic)** ==Revisit learning from Year 1 Autumn 2== ▪ *Understand how to research for information on the internet.* **Online safety: We are Year 2 rule writers (Reviewing and editing**	**Computer Networks: We are zoologists (Collecting data)** ==Revisit learning from Year 1 Spring 1== ▪ *Understand how to sort and classify a group of items.* ▪ *Understand how to use simple charting software to produce*	**Communication and Collaboration: We are detectives (Collecting clues)** ▪ *Understand that email can be used to communicate.* ▪ *Be aware of online safety issues when using email.* **Online safety: We are safe searchers (Learning how to use search engines safely)**	**Computational Thinking: We are game testers (exploring how computer games work)** ==Revisit learning from Year 1 Summer 1== ▪ *Describe carefully what happens in computer games.* ▪ *Be aware of how to use games safely and in balance with other activities.*	**Programming on screen** ==Revisit learning from Spring 2== ▪ *Have a clear understanding of algorithms as sequences of instructions.* ▪ *Be aware of a range of game designers, e.g. male/female, BAME.*	**Creativity: We are photographers (taking better photos)** ==Revisit learning from Year 1 Summer 2== ▪ *Consider the technical and artistic merits of photographs.* **Online safety: We are game raters (Solving online safety problems)**

our online safety guidelines) *Revisit learning from Year 1 Autumn 1* ▪ Consider online safety scenarios encountered in Year 1 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules. ▪ Consider what strategies they might use if their usual trusted adult is not available.	pictograms and other basic charts. **Online safety: We are not online bullies (Creating a strong message against online bullying)** *Revisit learning from Year 1 Autumn 2* ▪ Begin to understand the concept of online bullying and the role of the bystander. ▪ Develop an understanding of the consequences of online bullying.	*Revisit learning from Year 1 Autumn 2* ▪ Understand the very basic principles of how search engines work. ▪ Understand the key steps for searching the web safely. ▪ Understand how to report concerns when searching the web.	**Online safety: Online safety: We are code masters (Generating strong passwords and keeping them safe)** *Revisit learning from Year 1 Spring 2* ▪ Understand that passwords are an important part of keeping information safe. ▪ Understand the differences between strong and weak passwords. ▪ Understand that sharing a password makes it weak.	**Online safety: We are online behaviour experts (Solving online safety problems)** *Revisit learning from Year 1 Summer 1* ▪ Understand that the way technology is used is as important as good online behaviour. ▪ Understand that the way we use technology impacts the people around us.	*Revisit learning from Year 1 Summer 2* ▪ Understand that the PEGI age system is useful for helping people decide which games are appropriate. ▪ Understand what to do if someone nearby is playing a game which is inappropriate for them.
Skill Progression	**Computer Networks: We are researchers (Researching a topic)** *Revisit learning from Year 1 Autumn 2* ● Develop collaboration skills through working as part of a group. ● Develop research skills through	**Computer Networks: We are zoologists (Collecting data)** *Revisit learning from Year 1 Spring 1* ▪ Sort and classify a group of items by answering questions. ▪ Collect data using tick	**Communication and Collaboration: We are detectives (Collecting clues)** ▪ Develop skills in opening, composing and sending emails. ▪ Gain skills in opening and listening to audio files on the computer.	**Computational Thinking: We are game testers (exploring how computer games work)** *Revisit learning from Year 1 Summer 1* ▪ Use logical reasoning to make predictions of what a program will do.	**Programming on screen** *Revisit learning from Spring 2* ▪ Convert simple algorithms to programs. ▪ Predict what a simple program will do. ▪ Spot and fix (debug) errors in their programs.	**Creativity: We are photographers (taking better photos)** *Revisit learning from Year 1 Summer 2* ▪ Use a digital camera or camera app. ▪ Take digital photographs. ▪ Review and reject or rate the

searching for information on the internet. • *Improve note-taking skills through the use of mind mapping.* • *Develop presentation skills through creating and delivering a short multimedia presentation.* • *Be critical and questioning of information online.* **Online safety: We are Year 2 rule writers (Reviewing and editing our online safety guidelines)** *Revisit learning from Year 1 Autumn 1* • *Review and edit their online safety guidelines.* • *Develop their online safety rules so they are easily understood*	*charts or tally charts.* ▪ *Use simple charting software to produce pictograms and other basic charts.* ▪ *Take, edit and enhance photographs.* ▪ *Record information on a digital map.* **Online safety: We are not online bullies (Creating a strong message against online bullying)** *Revisit learning from Year 1 Autumn 2* ▪ *Recall their online safety rules for reporting concerns and inappropriate behaviour.*	▪ *Use appropriate language in emails.* ▪ *Develop skills in editing and formatting text in emails.* **Online safety: We are safe searchers (Learning how to use search engines safely)** *Revisit learning from Year 1 Autumn 2* ▪ *Use the key steps for searching the web safely.*	▪ *Test these predictions.* ▪ *Think critically about computer games and their use.* **Online safety: Online safety: We are code masters (Generating strong passwords and keeping them safe)** *Revisit learning from Year 1 Spring 2* ▪ *Be able to recall the differences between strong and weak passwords.*	**Online safety: We are online behaviour experts (Solving online safety problems)** *Revisit learning from Year 1 Summer 1* ▪ *Further develop responses to incidents of poor behaviour online.*	*images they take.* ▪ *Edit and enhance their photographs.* ▪ *Select their best images to include in a shared portfolio.* **Online safety: We are game raters (Solving online safety problems)** *Revisit learning from Year 1 Summer 2* ▪ *Recognise the PEGI age rating system for digital games.*

	and appropriate for Year 2 pupils.					
Meta Cognition						
Year 3	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Concept	**Rebellion and Invasion**	**Natural elements**	**Civilisation**	**Environmental**	**Discoveries**	**Culture**
Knowledge	**Communication and Collaboration: We are communicators (collecting and analysing data)** *Revisit learning from Year 2 Spring 1* ▪ *Develop a basic understanding of how email works.* ▪ *Be aware of broader issues surrounding email, including 'netiquette' and online safety.* **Online Safety: We are Year 3 rule writers (Reviewing and editing our online safety rules)** *Revisit learning from Year 2 Autumn 1*	**Computational Thinking: We are bug fixers (Finding and correcting bugs in programs)** *Revisit learning from Year 2 Summer 1* ▪ *Increase their knowledge and understanding of Scratch.* ▪ *Recognise a number of common types of bug in software.* **Online safety: We are digital friends (Developing an awareness of online bullying)** *Revisit learning from Year 2 Autumn 2*	**Programming: We are programmers (Programming an animation)** *Revisit learning from Autumn 2* ▪ *Increase their knowledge and understanding of algorithms.* ▪ *Be aware of pioneers in Computer Science, e.g. 7 Black pioneers:* *https://blog.newrelic.com/culture/black-history-month-computer-science-infographic/* **Online safety: We are internet detectives (Assessing the**	**Productivity: We are opinion pollsters (collecting and analysing data)** *Revisit learning from Year 2 Autumn 2* ▪ *Understand some elements of survey design.* ▪ *Understand some ethical and legal aspects of online data collection.* **Online safety: We are aware of our digital footprint (Understanding the digital trails we leave behind)** *Revisit learning from Autumn 2* ▪ *Understand that every time we use the internet we*	**Creativity: We are presenters (Videoing performance)** *Revisit learning from Year 2 Summer 2* ▪ *Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.* **Online safety: We are netiquette experts (Practising good netiquette)** *Revisit learning from Autumn 1 and Spring 2* ▪ *Understand that good online behaviour is*	**Creativity: We are vloggers (Making and sharing a short screencast presentation)** *Revisit learning from Year 2 Autumn 1* ▪ *Develop understanding of how the internet, the web and search engines work.* **Online safety: We are avatar creators (Who do we really know online?)** *Revisit learning from Spring 1* ▪ *Understand that internet identities are actively constructed by the user.*

	▪ *Consider online safety scenarios encountered in Year 2 (both at school and at home) and appreciate how these new experiences can be used to refine their online safety rules.* ▪ *Consider what new strategies they can apply to online safety scenarios, such as calling Childline.*	▪ *Begin to understand that information shared online cannot always be controlled* ▪ *Develop a deeper understanding of the consequences of online bullying.* ▪ *Understand the role of a bystander in online bullying.*	**trustworthiness of websites)** *Revisit learning from Year 2 Autumn 2* ▪ *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 different ways to report concerns and inappropriate behaviour.*	*leave a digital trail that can be found, copied, shared and broadcast* ▪ *Understand that the things we upload onto the internet last forever.*	*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.*	
Skill Progression	**Communication and Collaboration: We are communicators (collecting and analysing data)** *Revisit learning from Year 2 Spring 1* ▪ *Gain skills in using email.* ▪ *Work collaboratively with a remote partner.* ▪ *Experience video conferencing.*	**Computational Thinking: We are bug fixers (Finding and correcting bugs in programs)** *Revisit learning from Year 2 Summer 1* ▪ *Develop a number of strategies for finding errors in programs.* ▪ *Build up resilience and*	**Programming: We are programmers (Programming an animation)** *Revisit learning from Autumn 2* ▪ *Create an algorithm for an animated scene in the form of a storyboard.* ▪ *Write a program in Scratch to create the animation.*	**Productivity: We are opinion pollsters (collecting and analysing data)** *Revisit learning from Year 2 Autumn 2* ▪ *Use the web to facilitate data collection.* ▪ *Gain skills in using charts to analyse data.* ▪ *Gain skills in interpreting results.*	**Creativity: We are presenters (Videoing performance)** *Revisit learning from Year 2 Summer 2* ▪ *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*	**Creativity: We are vloggers (Making and sharing a short screencast presentation)** *Revisit learning from Year 2 Autumn 1* ▪ *Use a search engine to learn about a new topic.* ▪ *Plan, design and deliver an interesting and engaging presentation.*

	Online Safety: We are Year 3 rule writers (Reviewing and editing our online safety rules) *Revisit learning from Year 2 Autumn 1* ▪ *Review and edit their online safety guidelines.* ▪ *Develop and edit their online safety rules so they are easily understood and appropriate for Year 3 pupils.*	▪ *strategies for problem solving.* **Online safety: We are digital friends (Developing an awareness of online bullying)** *Revisit learning from Year 2 Autumn 2* ▪ *Recall that information shared online cannot always be controlled.*	▪ *Correct mistakes in their animation programs.* **Online safety: We are internet detectives (Assessing the trustworthiness of websites)** *Revisit learning from Year 2 Autumn 2* ▪ *Demonstrate which web pages they consider most useful and trustworthy.* ▪ *Recall different ways to report concerns and inappropriate behaviour.*	▪ *Be critical and questioning of information online.* **Online safety: We are aware of our digital footprint (Understanding the digital trails we leave behind)** *Revisit learning from Autumn 2* ▪ *Think carefully and demonstrate to others that every time we use the internet we leave a digital trail that can be found, copied, shared and broadcast.*	*setting in/out points.* **Online safety: We are netiquette experts (Practising good netiquette)** *Revisit learning from Year 2 Spring 1 and Year 3 Spring 2* ▪ *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.*	▪ *Search for and evaluate online images.* ▪ *Create their own original images.* ▪ *Create a video slidecast of a narrated presentation.* **Online safety: We are avatar creators (Who do we really know online?)** *Revisit learning from Spring 1* ▪ *Recognise that internet identities can be misleading or not representative of the creator* ▪ *Recall that personal information should not be shared by anyone online who we don't know in real life.*
Meta Cognition						
Year 4	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Concept	**Rebellion and Invasion**	**Natural elements**	**Civilisation**	**Environmental**	**Discoveries**	**Culture**

| Knowledge | **Programming: We are software developers (Developing a simple educational game)** *Revisit learning from Year 3 Spring 1*
• *Understand and use variables.*
• *Recognise the importance of user interface design, including consideration of input and output.*
• *Be aware of pioneers in Computer Science, e.g. 7 Black pioneers: https://blog.newrelic.com/culture/black-history-month-computer-science-infographic/*

Online safety: We are Year 4 rule writers (Reviewing and editing our online safety rules) *Revisit learning from Year 3 Autumn 1*
• *Consider online safety scenarios encountered in* | **Computer Network: We are HTML Editors (Editing and writing HTML)** *Revisit learning from Year 3 Spring 2*
• *Understand some technical aspects of how the internet makes the web possible.*
• *Understand some of the risks in using the web.*

Online safety: We are standing up to peer pressure (Dealing positively with peer pressure) *Revisit learning from Year 3 Summer 1*
• *Understand that peer pressure can be a positive and negative influence.*
• *Understand that access to the internet is not the same for everyone.* | **Creativity: We are Musicians (Producing digital music)**
• *Develop an awareness of how their composition can enhance work in other media.*

Online safety: We are aware that our online content lasts forever (Getting the message: pre- and post-internet) *Revisit learning from Year 3 Spring 2*
• *Understand that because of the internet, information can be spread more quickly and reach more people now than at any time in the past.*
• *Understand that although information posted on the internet might not always be true or accurate, it lasts forever.* | **Productivity: We are meteorologists (Presenting the weather)** *Revisit learning from Year 3 Spring 2 and Summer 1*
• *Understand different measurement techniques for weather, both analogue and digital.*

Online safety: We are online risk managers (Understanding risk and prevention of information loss) *Revisit learning from Year 3 Spring 1*
• *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.* | **Computational Thinking: We are designers (Prototyping an item)** *Revisit learning from Autumn 1*
• *Understand different forms of input and output (such as sensors, switches, motors, lights and speakers).*
• *Be aware of influential BAME tech leaders in the UK: https://www.inclusiveboards.co.uk/ib100*

Online safety: We are respectful of digital rights and responsibilities (Understanding and respecting digital rights and responsibilities) *Revisit learning from Autumn 1*
• *Understand that both digital rights and responsibilities are important to ensure the internet is a great* | **We are co-authors (Producing a wiki)** *Revisit learning from Autumn 2*
• *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.*
• *Understand that information online can sometimes be presented with western bias.*

Online Safety: We are careful when talking to virtual friends (Virtual friendship vs real friendship; who we can trust) |

	Year 3 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules. ▪ *Consider what new strategies they can apply to online safety scenarios, beyond talking to a trusted adult.*				*place for everyone.* ▪ *Understand that there are consequences for knowingly ignoring rights.*	<mark>*Revisit learning from Year 3 Summer 2*</mark> ▪ *Understand that virtual friends are still strangers that they do not know.* ▪ *Apply their knowledge of online safety to decide what information they, as virtual friends, can safely share online.* ▪ *Recap rules for reporting suspicious or uncomfortable online situations.*
Skill Progression	**Programming: We are software developers (Developing a simple educational game)** <mark>*Revisit learning from Year 3 Spring 1*</mark> ▪ *Develop an educational computer game using selection and repetition.* ▪ *Start to debug computer programs.*	**Computer Network: We are HTML Editors (Editing and writing HTML)** <mark>*Revisit learning from Year 3 Spring 2*</mark> ▪ *Use HTML tags for elementary mark up.* ▪ *Use hyperlinks to connect ideas and sources.*	**Creativity: We are Musicians (Producing digital music)** ▪ *Use one or more programs to edit music.* ▪ *Create and develop a musical composition, refining their ideas through reflection and discussion.* ▪ *Develop collaboration skills.*	**Productivity: We are meteorologists (Presenting the weather)** <mark>*Revisit learning from Year 3 Spring 2 and Summer 1*</mark> ▪ *Use computer-based data logging to automate the recording of some weather data.* ▪ *Use spreadsheets to create charts*	**Computational Thinking: We are designers (Prototyping an item)** <mark>*Revisit learning from Autumn 1*</mark> ▪ *Design and make an on-screen prototype of a computer-controlled toy.* ▪ *Design, write and debug the control and monitoring*	**We are co-authors (Producing a wiki)** <mark>*Revisit learning from Autumn 2*</mark> ▪ *Become familiar with Wikipedia, including potential problems associated with its use.* ▪ *Practise research skills.*

	Online safety: We are Year 4 rule writers (Reviewing and editing our online safety rules) *Revisit learning from Year 3 Autumn 1* ▪ *Review and edit their online safety guidelines.* ▪ *Develop their online safety rules so they are easily understood and appropriate for Year 4 pupils.*	▪ *Code up a simple web page with useful content.* **Online safety: We are standing up to peer pressure (Dealing positively with peer pressure)** *Revisit learning from Year 3 Summer 1* ▪ *Recall ways to report concerns and inappropriate behaviour.*	**Online safety: We are aware that our online content lasts forever (Getting the message: pre- and post-internet)** *Revisit learning from Year 3 Spring 2* ▪ *Demonstrate an understand that although information posted on the internet might not always be true or accurate, it lasts forever.*	▪ *Analyse data, explore inconsistencies in data and make predictions* ▪ *Practise using presentation software and, optionally, video.* **Online safety: We are online risk managers (Understanding risk and prevention of information loss)** *Revisit learning from Year 3 Spring 1* ▪ *Demonstrate an awareness of viruses and what to do if they think their account has been compromised.*	*program for their toy.* **Online safety: We are respectful of digital rights and responsibilities (Understanding and respecting digital rights and responsibilities)** *Revisit learning from Autumn 1* ▪ *Further develop a positive and responsible attitude towards technology and internet use.*	▪ *Write for a target audience using a wiki tool.* ▪ *Develop collaboration skills.* ▪ *Develop proofreading skills.* ▪ *Be critical and questioning of information online.* **Online Safety: We are careful when talking to virtual friends (Virtual friendship vs real friendship; who we can trust)** *Revisit learning from Year 3 Summer 2* ▪ *Apply their knowledge of online safety to decide what information they, as virtual friends, can safely share online.*
Meta Cognition						
Year 5	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Concept	**Rebellion and Invasion**	**Natural elements**	**Civilisation**	**Environmental**	**Discoveries**	**Culture**

Knowledge	Programming: We are game developers (Developing an interactive game)	Creativity: We are Artists (Fusing geometry and art)	Computational Thinking: We are cryptographers (Cracking codes)	Communication and collaboration: We are bloggers (Sharing experiences and opinions)	Computer Network: We are web developers (Creating a website about online safety)	Productivity: We are architects (Creating a virtual space)
	Revisit learning from Year 4 Autumn 1	*Revisit learning from Autumn 1*	*Revisit learning from Autumn 1*	*Revisit learning from Year 4 Summer 2*	*Revisit learning from Year 4 Autumn 2*	*Revisit learning from Autumn 2*
	▪ *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.* ▪ *Be aware of pioneers in*	▪ *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.* ▪ *Develop some awareness of computer generated art, in particular fractal-based landscapes.* **Online safety: We are responsible for our online actions (Understanding the**	▪ *Be familiar with semaphore and Morse code.* ▪ *Understand the need for private information to be encrypted.* ▪ *Appreciate the need to use complex passwords and to keep them secure.* ▪ *Have some understanding of how encryption works on the web.* **Online safety: We are content evaluators (Understanding advertising and endorsements online)** *Revisit learning from Year 4 Summer 1* ▪ *Understand that some people get paid to endorse products online.*	▪ *Become familiar with blogs as a medium and a genre of writing.* **Online safety: We are protecting our online reputation (Developing strategies to protect our future selves)** *Revisit learning from Autumn 2* ▪ *Understand that posting inappropriate information online can cause regret later.* ▪ *Understand how to manage their online reputation.* ▪ *Understand that, although information posted on the internet might not always be true or*	▪ *Understand some elements of how search engines select and rank results.* ▪ *Develop their understanding of online safety and responsible use of technology.* **Online safety: We are respectful of copyright (Understanding and applying copyright laws)** *Revisit learning from Year 4 Summer 1* ▪ *Understand that copyright laws exist to protect original content creators.* ▪ *Understand that content they choose to use or upload on the internet may be*	▪ *Understand the work of architects, designers and engineers working in 3D.* **Online safety: We are game changers (Understanding how games developers make money)** *Revisit learning from Spring 1* ▪ *Understand different business models for online games.* ▪ *Understand that accounts for devices are linked to real-life bank accounts.* ▪ *Understand that some features in online games and apps cost real money.*

		impact of online behaviour)	Appreciate the value of trusted adults in helping them reach an informed conclusion.	accurate, it can last forever.	subject to copyright laws.	Understand that research, parental controls and device settings are tools we can use to help us game confidently.

Computer Science, e.g. 7 Black pioneers: https://blog.newrelic.com/culture/black-history-month-computer-science-infographic/

Online safety: We are Year 5 rule writers (Reviewing and editing our online safety rules)
<mark>Revisit learning from Year 4 Autumn 1</mark>

- *Consider online safety scenarios encountered in Year 4 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.*
- *Consider what new strategies they can apply to online safety scenarios, such as*

<mark>Revisit learning from Year 4 Summer 1</mark>

- *Recognise that online behaviour can have real life negative effects on other people.*
- *Understand that we must take responsibility for our own actions online, regardless of what other people are doing.*

- *Understand that it is possible to search the internet for information about particular individuals.*

- *Further develop their understanding of rights and responsibilities as digital citizens.*

	clicking the CEOP 'Report abuse'.					

Skill Progression	Programming: We are game developers (Developing an interactive game) *Revisit learning from Year 4 Autumn 1*	Creativity: We are Artists (Fusing geometry and art) *Revisit learning from Autumn 1*	Computational Thinking: We are cryptographers (Cracking codes) *Revisit learning from Autumn 1*	Communication and collaboration: We are bloggers (Sharing experiences and opinions) *Revisit learning from Year 4 Summer 2*	Computer Network: We are web developers (Creating a website about online safety) *Revisit learning from Year 4 Autumn 2*	Productivity: We are architects (Creating a virtual space) *Revisit learning from Autumn 2*
	▪ 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.	▪ Develop an understanding of turtle graphics. ▪ Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers.	▪ Encrypt and decrypt messages in simple ciphers.	▪ 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.	▪ Develop their research skills to decide what information is appropriate. ▪ Question the plausibility and quality of information. ▪ Develop and refine their ideas and text collaboratively.	▪ 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.
	Online safety: We are Year 5 rule writers	**Online safety: We are responsible for our online actions (Understanding the impact of online behaviour)** *Revisit learning from Year 4 Summer 1* ▪ Critically assess all information surrounding an online safety scenario to	**Online safety: We are content evaluators (Understanding advertising and endorsements online)** *Revisit learning from Year 4 Summer 1* ▪ Develop a discerning attitude to online content so that they can confidently reach their own conclusions.	**Online safety: We are protecting our online reputation (Developing strategies to protect our future selves)** *Revisit learning from Autumn 2* ▪ Demonstrate understanding of how to manage their online reputation.	**Online safety: We are respectful of copyright (Understanding and applying copyright laws)** *Revisit learning from Year 4 Summer 1* ▪ Demonstrate their developing r understanding of rights and responsibilities as digital citizens.	**Online safety: We are game changers (Understanding how games developers make money)** *Revisit learning from Spring 1* ▪ Be able to recall different business models for online games.

	(Reviewing and editing our online safety rules) <mark>Revisit learning from Year 4 Autumn 1</mark> *Review and edit their online safety guidelines.* *Develop their online safety rules so they are easily understood and appropriate for Year 5 pupils.*	*decide whether it constitutes online bullying.* *Use their knowledge of online safety to reach a consensus on the appropriate response to an online incident.*				

Meta cognition						
Year 6	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Concept	**Rebellion and Invasion**	**Natural elements**	**Civilisation**	**Environmental**	**Discoveries**	**Culture**
Knowledge	**Programming: We are adventure gamers (Making a text-based adventure game)** *Revisit learning from Year 5 Autumn 1* ▪ *Learn some of the syntax of a text-based programming language.* ▪ *Be aware of pioneers in Computer Science, e.g. 7 Black pioneers: https://blog.newrelic.com/culture/black-history-month-computer-science-infographic/* **Online safety: We are online safety ambassadors (Reviewing**	**Creativity: We are travel writers (Using media and mapping to document a trip)** *Revisit learning from Year 5 Spring 2* ▪ *Understand the safe use of mobile technology, including GPS.* **Online safety: We will not share inappropriate images (Inappropriate use of technology and the internet)** *Revisit learning from Year 5 Autumn 2* ▪ *Understand the negative consequences of sharing nude selfies.* ▪ *Understand that once an image is online,*	**Computational Thinking: We are computational thinkers (Mastering algorithms for searching, sorting and mathematics)** *Revisit learning from Autumn 1 and Year 5 Spring 1* ▪ *Understand how some key algorithms can be expressed as programs.* ▪ *Understand that some algorithms are more efficient than others for the same problem.* ▪ *Understand common algorithms for sorting and searching.* **Online safety: We are safe social networkers (Understanding that**	**Computer Networks: We are network technicians (Exploring computer networks including the internet)** *Revisit learning from Year 5 Summer 1* ▪ *Understand the basic hardware needed for computer networks to work.* ▪ *Understand key features of internet communication protocols.* ▪ *Develop a basic understanding of how domain names are converted to numerical IP addresses.* **Online Safety: We are respectful of others**	**Creativity: We are advertisers (Creating a short television advert)** *Revisit learning from Autumn 2.* ▪ *Understand storyboard an effective advert for a cause.* **Online safety: We are online safety problem solvers (Using our skills to resolve unfamiliar situations)** *Revisit learning from Autumn 1* ▪ *Revisit the key concepts of digital citizenship.*	**Productivity: We are publishers (Creating a yearbook or a magazine)** *Revisit learning from Year 4 Summer 2.* ▪ *Contribute to large collaborative projects, facilitated using online tools.* **Online safety: We are safe gaming experts (Creating and delivering advice on safe online gaming)** *Revisit learning from Spring 1* ▪ *Understand the risks involved with online gaming, including exposure to inappropriate content,*

	and editing our online safety rules) *Revisit learning from Year 5 Autumn 1* *Consider online safety scenarios encountered in Year 5 (both at school and at home) and appreciate how these new experiences can be used to update their online safety rules.*	*it stays online forever.* *Understand what is meant by nude selfies and learn that, sending, sharing and storing inappropriate images of Under-18s is a crime.*	internet safety skills must always be switched on) *Revisit learning from Year 5 Spring 2* *Understand that most online sites and apps require an account holder to be a minimum of 13 years old.* *Understand that they should check and adhere to the age restrictions of a site or app.* *Understand why age restrictions apply to online communication tools.*	(Respecting the personal information and privacy of others) *Revisit learning from Autumn 2* *Understand that everyone has a right to privacy.* *Understand that they need to be mindful of protecting other people's personal information online.*		*grooming, bullying, trolling 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.*
Skill Progression	**Programming: We are adventure gamers (Making a text-based adventure game)** *Revisit learning from Year 5 Autumn 1* *Use commands to display text on screen, accept typed user input, store and retrieve data using variables and select from a list.*	**Creativity: We are travel writers (Using media and mapping to document a trip)** *Revisit learning from Year 5 Spring 2* *Research a location online using a range of resources appropriately.* *Capture images, audio and video while on location.*	**Computational Thinking: We are computational thinkers (Mastering algorithms for searching, sorting and mathematics)** *Revisit learning from Autumn 1 and Year 5 Spring 1* *Develop the ability to reason logically about algorithms.* *Appreciate algorithmic approaches to*	**Computer Networks: We are network technicians (Exploring computer networks including the internet)** *Revisit learning from Year 5 Summer 1* *Appreciate that computer networks transmit and receive information digitally.*	**Creativity: We are advertisers (Creating a short television advert)** *Revisit learning from Autumn 2* *Think critically about how video is used to promote a cause.* *Work collaboratively to shoot suitable original footage and source additional*	**Productivity: We are publishers (Creating a yearbook or a magazine)** *Revisit learning from Year 4 Summer 2.* *Manage or contribute to large collaborative projects, facilitated using online tools.* *Write and review content.*

▪ Plan a text-based adventure with multiple 'rooms' and user interaction. ▪ Thoroughly debug the program. **Online safety: We are online safety ambassadors (Reviewing and editing our online safety rules)** <mark>*Revisit learning from Year 5 Autumn 1*</mark> ▪ Consider what new strategies they can apply to online safety scenarios, such as using reporting buttons within websites and apps. ▪ Review and edit their online safety guidelines. ▪ Develop their online safety rules so they are easily understood and appropriate for Year 6 pupils.	▪ Showcase shared media content through a mapping layer. **Online safety: We will not share inappropriate images (Inappropriate use of technology and the internet)** <mark>*Revisit learning from Year 5 Autumn 2*</mark> ▪ Develop confidence in saying no when they are posed with a request for inappropriate and/or indecent images of themselves.	*problems in mathematics.* **Online safety: We are safe social networkers (Understanding that internet safety skills must always be switched on)** <mark>*Revisit learning from Year 5 Spring 2*</mark> ▪ Develop resilience to online behaviour and influences in an unfamiliar setting. ▪ Learn how to use appropriate social networking sites safely.	**Online Safety: We are respectful of others (Respecting the personal information and privacy of others)** <mark>*Revisit learning from Autumn 2*</mark> ▪ Consider situations where they must be mindful of the privacy preferences of others. ▪ Create a permission pledge for their family.	*content, acknowledging intellectual property rights.* ▪ Work collaboratively to edit the assembled content to make an effective advert. **Online safety: We are online safety problem solvers (Using our skills to resolve unfamiliar situations)** <mark>*Revisit learning from Autumn 1*</mark> ▪ Develop confidence in their ability to act appropriately when confronted with unfamiliar situations involving technology and the internet.	▪ Source digital media while demonstrating safe, respectful and responsible use. ▪ Design and produce a high-quality print document. **Online safety: We are safe gaming experts (Creating and delivering advice on safe online gaming)** <mark>*Revisit learning from Spring 1*</mark> ▪ Apply their knowledge of safe gaming practices to plan and deliver an assembly to other children and/or parents. ▪ Consolidate everything they have learnt about age-appropriate online gaming in preparation for their transition to KS3.

Meta Cognition				