Overview Computing Year 5

-Computational Thinking -Digital Literacy and Online Safety -Computers and Hardware

	Autumn Term		Spring Term		Summer Term	
Big Question	Where do we come from?		Could we live anywhere else?		How are we similar? How are we different?	
Other Subject links	Vikings, Forces, Life Cycles		Maya, Space (Earth, Moon and Sun)		Brazil, changing materials, changes and reproduction	
	Autumn 1 - Stop Motion Animation 	Autumn 2 - Programming Music 	Spring 1 - Mars Rover 1 Data Handling 	Spring 2 - Mars Rover 2 3D Design Skills 	Summer 1 - Search Engines 	Summer 2 - Programming Micro:bit / Lego Wedo
National Curriculum	- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	- 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	- 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	- 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; how they can provide multiple services, such as the worldwide web; and the opportunities they offer for communication and collaboration - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	- 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
Knowledge	**Explain** how identity online can be copied, modified or altered. **Know** how to decompose animations into a series of images. **Identify** ways to improve and edit programs, videos, images etc. **Know** how to use video editing software to animate (Stopmotion).	**Explain** that there are some people who we can communicate with online who may want to do harm. **Know** how to decompose a program without support. **Know** how to predict how software will work based on previous experience. **Know** how to use nested loops (loops within loops). **Know** how to debug our own code. **Know** how to use repetition within a program. **Know** how to amend code within a live scenario. **Identify** ways to improve and edit programs, videos, images etc.	**Know** some positive contributions we can make to be part of online communities. **Know** some of the online communities we are part and describe how to collaborate with others positively. **Know** how to get help for someone that is being bullied online and assess when we need to do or say something or tell someone. **Explain** how to report online bullying and block people on the apps and platforms that we use. **Know** some helpline services who can support children (e.g. Childline). **Know** that external devices can be programmed by a separate computer. **Know** the difference between ROM and RAM. **Know** how the size of RAM affects the processing of data. **Know** the fetch, decode, execute cycle of the CPU. **Know** the vocabulary associated with data: data and transmit. **Know** how the data for digital images can be compressed. **Know** that computers transfer data in binary and understand simple binary addition. **Explain** that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations. **Know** how bit patterns represent images and pixels. **Know** how to use 3D design software e.g. TinkerCAD.		**Know** how to create and use strong and secure passwords. **Explain** how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. **Explain** how and why some apps may request or take payment for additional content (e.g. in-app purchases) and explain why we should seek permission from a trusted adult before purchasing **Know** how to use different search technologies. **Know** what a search engine is. **Know** how to search for information about an individual online and create a summary report of the information. **Identify** ways that information about people online can be used by others to make judgments about an individual.	**Explain** and give examples of when and why it is important to be 'sceptical'. **Explain** why some information online may not be honest, accurate or legal. **Explain** why information that is on a large number of sites may still be inaccurate or untrue and how this may happen (e.g. sharing misinformation on purpose or by accident.) **Explain**, assess, and justify when it is acceptable to use the work of others. **Know** how to decompose a program without support. **Know** how to predict how software will work based on previous experience. **Know** how to use nested loops (loops within loops). **Know** how to debug our own code. **Know** how to use repetition within a program. **Know** how to amend code within a live scenario.

						Identify ways to improve and edit programs, videos, images etc.
Skills	Online Safety -I can understand the potential risk of providing personal information online. -I can check and refine a series of instructions.	Online Safety -I understand the potential risks of using internet communication tools, and understand how to minimise those risks. -I know that it is unsafe to arrange to meet unknown people online. -I can combine sequences of instructions and procedures to turn devices on and off. -I can input and output. -I can write programs that have sequences and repetitions. -I can check and refine a series of instructions. =I can detect errors in a program and correct them.	Online Safety -I understand that some messages may be malicious and know how to deal with this. -I can search databases for information using < or > or = -I can create databases planning the fields, rows and columns. -I can create graphs and tables to be copied and posted into different documents. -I can collect, analyse, evaluate and present data and information in a variety of appropriate forms.	Online Safety -I know what to do if I discover something malicious or inappropriate. -I understand the benefit of using a 'nickname' when online. -I can write programs that have sequences and repetitions. -I can check and refine a series of instructions. -I can detect errors in a program and correct them. -I can collect, analyse, evaluate and present data and information in a variety of appropriate forms.	Online Safety -I can discuss the positive and negative impact of the use of ICT. -I know how to report anything suspicious. -I can use a search engine using keyword searches. -I can compare the results of different searches. -I can decide which sections are appropriate to copy and paste. -I can save stored information using lines of enquiry. -I can independently search for images that can be used in documents. -I can independently create a hyperlink. -I can learn how to share a webpage so it can be viewed by anyone.	Online Safety -I understand I should not publish other peoples' pictures or tag them online without their permission. -I know that content put online is extremely difficult to remove. -I can combine sequences of instructions and procedures to turn devices on and off -I can input and output -I can use an IT program to control an external device -I can use ICT to measure sound or light or temperature using sensors. -I can write programs that have sequences and repetitions -I can check and refine a series of instructions. -I can detect errors in a program and correct them.

Vocabulary	Data, information, harassment, phishing, trickery, trolling.	Algorithm, nested loops, code blocks, decompose, systematic, tinker, variable, commands, loop, debug. Catfishing, fake Profile, Childline.	ROM, RAM, CPU, fetch, decode, execute, data, transmit, binary, Boolean, company logo, numerical data, simulation, radio signal, geolocation. Cyberbully, cyberstalking, exclusion.		Data, information, fact, opinion belief, true, false, valid, reliable, evidence, mis-information, fake news, dis-information, sceptical, hoax, geolocation.	Algorithm, nested loops, code blocks, decompose, systematic, tinker, variable, commands, loop, debug.
Computer program/s and/or devices needed	iPads Kapwing Studio Stop Motion Studio	Laptops / Headphones	Internet access	TinkerCAD Software	Internet access Canva software	iPads Micro:bits Lego Wedo