Subject	Y8 Threshold Knowledge – Autumn/Spring/Summer term	How to support students' learning
IT	**Autumn Term** **Computer Systems -** 1. Understand the key internal components of a computer system (CPU, memory, hard drive), their purposes, and how data is input, processed, and output using various devices. 2. Understand the differences between storage devices, storage media, and types of storage (primary and secondary), including their capacities and suitability for different scenarios. 3. Identify and explain the functions of input, output, and peripheral devices, and evaluate their use in specific contexts. 4. Justify the choice of hardware and software solutions for specific scenarios, considering performance, storage, and user requirements. 5. Recognise the range of Internet of Things devices, their benefits, drawbacks, and the impact they have on daily life and technology. **Computer Systems -** 6. Understand the basics of logic gates (AND, OR, NOT), interpret logic circuits to complete truth tables, and evaluate outputs from combinations of gates. 7. Understand units of measurement in computing (bits, bytes, kilobytes) and how binary and ASCII are used to represent characters. Convert between binary and denary numbers. 8. Explain how search engines operate, including crawling, selecting, and ranking results. Use search technologies effectively and discuss their societal impacts. 9. Explore the history of computing, its development over time, and recognise key figures and their contributions to the industry. 10. Understand the purpose and key features of infographics and how layout conventions and design principles are applied to create effective visual representations.	• Categorise devices at home as inputs/outputs and storage to practice and reiterate the learning. • Use the BBC Bitesize information to reinforce learning in this topic: https://www.bbc.co.uk/bitesize/guides/zws8d2p/revision/1 • Use this website to further your knowledge of how computers work: https://www.bbc.co.uk/teach/class-clips-video/computing-ks3-ks4-megabits/zmp3nrd • Use the BBC Bitesize information to reinforce learning in this topic: • https://www.bbc.co.uk/bitesize/guides/zkkkw6f/revision/1 • https://www.bbc.co.uk/bitesize/guides/z26rcdm/revision/1 • Watch this YouTube to further enhance your understanding of logic gates: https://www.youtube.com/watch?v=bjVm8NPmyng • Additional resources on logic gates can be accessed on Oak Academy to stretch and challenge students: https://teachers.thenational.academy/lessons/logic-gates-61h64d • Additional resources on binary can be accessed on Oak Academy to stretch and challenge students: https://teachers.thenational.academy/lessons/binary-mosaic-6dhk8t?from_query=binary

		• Do some wider reading into the history of computers using this website: https://www.computerhistory.org/timeline/computers/ • Do some wider reading into the key figures in the world of computing using this website: https://www.computerhistory.org/babbage/people/
	Spring Term **Artificial Intelligence -** 11. Know what AI is and why it matters in today's world. 12. Give examples of how AI is used in different industries, like virtual assistants and self-driving cars. 13. Understand that machine learning is a key part of AI and know basic concepts like training types. 14. Explain the differences between supervised, unsupervised, and reinforcement learning. 15. Understand how AI affects jobs and industries. 16. Recognise ethical issues in AI, such as bias and data privacy. 17. Know how AI impacts society, including job changes and access to technology. 18. Show awareness of new trends and developments in AI. 19. Understand ideas about the future of AI, like Artificial General Intelligence (AGI). 20. Discuss AI's risks, benefits, and its long-term effects on society.	• Watch this website to enhance understanding of this topic that introduces AI and the use of robotics to students: https://www.youtube.com/watch?v=HvMQONnCXbE • Use this website and watch the videos at the bottom to reinforce learning in this topic: https://machinelearningforkids.co.uk/#!/links • This website contains useful information and tutorials for children and beginner programmers for building AI programs: https://ecraft2learn.github.io/ai/
	Summer Term **Edublocks Programming -** 21. Understand the difference between input and output and write a program using input and output data. 22. Understand what is meant by sequence, selection and iteration. 23. Write a program that uses selection with more than two outcomes (IF-ELIF-ELSE). 24. Write a program that draws basic shapes using Counter-Controlled iteration (FOR loop). 25. Write algorithms that help create solutions to a problem.	• Encourage your child to explore with the Edublocks tool: https://edublocks.org/ • Use this YouTube playlist with informative tutorials to develop skills using Edublocks: https://www.youtube.com/playlist?list=PLKiEfyjhkhxfm1n3dlqgdLT0easI11R_D • Encourage your child to practice programming skills using: https://www.online-python.com/

	Python Programming - 26. Output strings into a program and use arithmetic operators to output integers into a program. 27. Know how to store variables and understand how they're different to constants. 28. Know how to write an IF statement using both two (IF-ELSE) and three-step procedures (IF-ELIF-ELSE). 29. Know how to write a basic FOR and WHILE loop. 30. Successfully write a range of programs that draw different shapes using the Turtle module.	• Use this website to find tutorials to help stretch and challenge their Python programming skills: https://www.w3schools.com/python/ • Use the BBC Bitesize information to reinforce learning in this topic: https://www.bbc.co.uk/bitesize/guides/zwmbgk7/revision/1