Year 9 Computing					
	Embarking	**Emerging**	**Developing**	**Securing**	**Mastering**
Algorithms	• Explain and show how algorithms can use selection (if), repetition (loops), procedures (sub- algorithms within an algorithm). • Explain why there is need to test algorithms before writing programs.	• I know how to design criteria to critically evaluate the quality of solutions and I can use the criteria to identify improvements and can make appropriate refinements to the solution.	• I can distinguish between an algorithm and programs and programs that implement that algorithm. • Explain how the choice of an algorithm should be influenced by the data.	• Explain how the choice of an algorithm should be influenced by the data. • Use flowcharts and pseudocode to design program solutions.	• Explain how algorithms can be improved, validated, tested and corrected. • Explain and show how different algorithms can have different performance characteristics for the same task.
Programming	• I can write simple programs in a High Level Language. • I know why there is need for programs to be translated from High Level Language to Machine Code. • I know the reasons for planning and designing programs before implementing them. • I know the meaning of data types and why different data types are used in different situations.	• I know the difference between, if and if then else statements. • I know why comments are used in a program. • I am able to use the if-then-else statements in a High Level Language.	• I know how and why values are data typed in many different languages when manipulated within programs. • I can use variable and relational operators within a loop to govern termination.	• I am able to use nested if statements in my programs. • I know the reason why functions and procedures are used in a program. • I know the reason why standards are used in developing computer programs. • I have practical experience of a high-level textual language, including using standard libraries when programming.	• I know the need for, and can write, custom functions including use of parameters and I can use nested selection statements. • I know the difference between, and I can use, both pre-tested e.g. 'While', and post-tested e.g. 'Until' loops. • I can design and write nested modular programs that enforce reusability utilising sub-routines wherever possible.
Computing Resources, Data and Information	• I can explain how data is represented as ones and zeros in the computer. • I can tell the different units of data storage such as nibble, bit, byte etc. • I able to use Logic Gates to draw Truth Tables. • I can name the different types of numbering systems.	• I know how to analyse and evaluate data and information. • I know the relationship between binary and file size (uncompressed). • I know that poor quality data leads to unreliable results, and inaccurate conclusions. • I know that digital computers use binary to represent all data.	• I know the reason why characters are coded using the ASCII and other coding systems. • I can convert data from hexadecimal to denary and binary systems • I know the relationship between data representation and data quality. • I can prepare data for printing including setting margins, headers and footers.	• I can solve more complex Boolean logic expressions. • I know the relationship between resolution and colour depth, including the effect on file size. • I know how to perform simple operations using bit patterns e.g. binary addition. • I can use the ASCII coding system to write simple coded messages.	• I know how to perform operations using bit patterns e.g. conversion between binary and hexadecimal, binary subtraction etc. • I can tell how data is represented using the Hexadecimal method and know why the hexadecimal system is used. • Explain the need for data compression, and be able to describe simple compression methods. • I can combine different logic gates and construct their Truth Tables.
Communication, Social Networks and the Internet	• I can describe the dangers and benefits brought about by online banking and online shopping and know why it is important to keep personal information safe and secure.	• I am able to use Internet facilities of various social networks to report suspected abusers. • I can describe the effect of using weak passwords and know the reasons why	• I know the ethical issues surrounding the application of information technology, and the existence of legal frameworks governing its use e.g. Data Protection Act, Computer Misuse Act etc.	• I can tell the signs and symptoms of abusers based on the type and tone of their communication. • I can explain why laws exist which prohibit wanton copying of online data and information and that information can be	• I know how to evaluate the trustworthiness of digital content and consider the usability of visual design features when designing and creating digital artefacts for known audience.

	• I understand why I should not meet up with strangers I meet online. • I know how to set my Social Network to private. • I know how to securely use Social Media by reporting abuse and blocking unwanted friend requests. • I know the possible benefits and risks of sharing information online and am able to identify sources of online risk.	passwords need to be changed regularly. • I know that I should not trust friends that I meet online and am aware they may not be who they say they are. • I can effectively use search engines and I know how they rank search results. • I can describe the dangers of viruses, malware and cookies and I am aware of the dangers they pose to internet users.	• I can distinguish between reliable and non-reliable sources of information got from the Internet using reasons. • I can perform more complex searches for information e.g. using Boolean and relational operators.	copied and passed on; seen by a large, invisible audience, and can be persistent. • I know how to use criteria to evaluate the quality of solutions and can identify improvements making some refinements to the solution, and future solutions.	• I know how to justify the choice of, and independently combine and use, multiple digital devices, internet services and application software to achieve given goals. • I can explain how data transmission occurs between digital computers over networks, including the internet i.e. IP addresses and packet switching.