	Year 2019 – 2020	Subject: Computing					
Other Curricular goals **"Everything is possible if you believe"** Throughout all our curriculum we actively encourage each child to reach their full potential by living out the gospel virtues. We aim to deepen their understanding and appreciation of the virtues to enable them to flourish. **Virtues:** **Year A** Respect/Courtesy Hope	**Curricular goal:** *This is a general statement/aim taken from national curriculum aims/rationale.*						
	Component: Algorithms						
	EYFS Expected	**Year 1 Expected**	**Year 2 Expected**	**Year 3 Expected**	**Year 4 Expected**	**Year 5 Expected**	**Year 6 Expected**
Year A & B	Can understand and follow instructions . Can describe their relative position such as behind or next to. (AoL/D - Maths SSM 40-60 mths)	- Begin to understand what an algorithm is. - Begin to write a simple set of instructions for a purpose using symbols.	- Understands what an algorithm is. - Writes a set of instructions for a purpose using symbols, numbers and words. - Understands that computers need precise instructions. - Shows care and precision to avoid errors.	- Designs some solutions (algorithms) that use repetition and two way selection (i.e if, then, else.) - Uses diagrams to express solutions. - Starts to use logical reasoning to predict outputs, showing some awareness of inputs.	- Knows which tasks best completed by human or computers. - Designs solutions by decomposing a problem and creates a sub-solution for each part of the problem (decomposition) - Recognises that there is more than one solution to a problem.	- Knows and can explain which tasks are best completed by human or computers. - Designs solutions by decomposing a problem and creates a sub-solution for each part of the problem (decomposition). - Recognises that there are several solutions to the same problem. - Understands that various algorithms exist for different functions. - Begins to identify patterns in algorithms that help to solve specific problems.	- Understand that iteration is the repetition of a process such as a loop. - Recognises that different algorithms exist for the same problem. - Detects errors in algorithms. - Rewrites and tests own tests and sequences. - Is able to identify similarities and differences in situations and can use these to solve problems (pattern recognition.)
	Component: Programming and Development						

Faith Charity Resilience Honesty **<u>Year B</u>** Thankfulness/Gratitude Patience Simplicity Forgiveness Kindness Service	Year A & B	Uses a simple program on a computer or a device. (Tech 40-60)	- Knows that users can develop their own programs. - Demonstrates this by creating simple programs e.g. on programmable robots. - Executes, checks and changes programs. - Understands that programs execute by following precise instructions.	- Develops their own programs e.g. robots. - Uses arithmetic operators and what if statements and loops within programs. - Uses logical reasoning to predict the behaviour of programs and detects and corrects simple semantic errors i.e. debugging.	- Begins to create programs that implement algorithms to achieve given goals. - Identifies and assigns variables in programs. - Uses loop commands "until" and sequences of selection statements in programs, including if, then, else statements.	- Understands differences between and appropriately uses 'if' and 'if', then and else statements. - Uses variable and relational operators within a loop to control 'endings' in programs. - Designs, writes and debugs (modular) programs using procedures (algorithms). - Knows that a procedure can be used to hide details in programs.	- Understands that programming bridges the gap between algorithmic solutions and computers. - Has practical experience of high level textural languages e.g. standard libraries when programming. - Uses some operators and expressions e.g. Boolean. - Starts to apply these in the context of program control (e.g. input/process/output.)	- Understands that programming bridges the gap between algorithmic solutions and computers. - Has practical experience of high level textural languages e.g. standard libraries when programming. - Uses a range of operators and expressions e.g. Boolean and applies them in the context of program control (e.g. input/process/output.) - Starts to select the appropriate data types.
	Component: Data & Data Representation							
	Year A & B	- Uses data to answer questions e.g. favourite colour of class. - Uses computers to make a list of data. - Begins to collect data on a data logging device. - Begin to recognise that digital content can be in many forms - video, music, pictures, games etc.	- Recognises that digital content can be represented in many forms. - Begins to distinguish between some of these forms and can explain the different ways that they communicate information. - Organises, stores, edits and manipulates	- Recognises the different types of data e.g. text and number. - Appreciates that programs can work with different types of data. - Recognises that data can be structured in tables to make it useful. - Confidently organises, stores, edits and manipulates data in a range of digital formats. - Begins to recognise the difference between data and information.	- Understands the difference between data and information. - Knows why sorting data in a 'flat file' can improve searching for information. - Begins to use filters or can perform single criteria searches for information.	- Understands and can clearly explain the difference between data and information. - Knows why sorting data in a 'flat file' can improve searching for information. - Performs more complex searches for information e.g. using Boolean and relational operators. - Analyses and evaluates data and information and recognises that poor quality data leads to unreliable results and inaccurate conclusions.	- Knows why sorting data in a 'flat file' can improve searching for information. - Performs more complex searches for information e.g. using Boolean and relational operators. - Analyses and evaluates data and information and recognises that poor quality data leads to unreliable results and inaccurate conclusions. - Begins to understand that digital computers are binary to represent all data. - Begins to understand how	- Knows that digital computers use binary to represent all data. - Understands how bit patterns represent numbers and images. - Knows that computers transfer data in binary (code). - Recognises the relationship between binary and file size (uncompressed) - Defines data types: real numbers and Boolean. Queries data on one table using typical query language.

							bit patterns represent numbers and images.	
	Component: Hardware and Processing							
	Year A & B	- Uses ICT hardware to interact with age appropriate computer software. (Knows how to operate simple equipment. Tech 30-50 mth) - Start to recognise that computers need programs to function. Knows that information can be retrieved from computers (Tech 40-60 mth) Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. (Tech 40-60 mth	- Understands that computers have no intelligence and can do nothing unless a program is used. - Recognises that all software executed (used) on digital devices is programmed (look at examples)	- Recognises that a range of digital devices can be considered a computer (look at examples). - Recognises and uses a range of input and output devices (e.g. robotics) - Understands how programs specify the function of a general purpose computer.	- Begins to recognise that computers collect data from various input devices e.g. sensors and application software. - Begins to understand the difference between hardware and application software and their roles within a computer system.	- Understands why and when computers are used. - Understands the main functions of the operating systems. - Knows the difference between physical, wireless and mobile networks. Look at examples e.g. internet: how they provide multiple services such as the world wide web.	- Recognise the function of the main internal parts of basic computer designs (architecture.) - Begins to understand the concept behind the fetch-execute cycle. - Starts to appreciate that there is a range of operating systems and application software for the same hardware.	- Recognises and understands the function of the main internal parts of basic computer designs -(architecture.) - Understands the concepts behind the fetch-execute cycle. - Knows that there is a range of operating systems and application software for the same hardware. - Tests, contrasts and evaluates the effectiveness of operating systems (eg. Windows android)
	Component: Communication and Networks							

	Year A & B	- Uses digital devices and computers to communicate e.g. webcams. - Accesses and saves information on a class network folder. - Begins to obtain content from the world wide web using a web browser.	- Obtains content from the world wide web using a web browser. - Understand the importance of communicating safely and respectfully on line and the need for keeping personal information private. Knows what to do when concerned about content or being contacted.	- Navigates the web and can carry out simple web searches to collect digital content. - Demonstrates use of computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online.	- Understands the difference between the internet and internet services e.g. world wide web. - Shows some awareness of, and can use some internet services such as VOIP. - Recognises what is acceptable and unacceptable behaviour when using technologies and online services.	- Understands how to effectively use search engines and knows how search results are selecting including that search engines are 'web crawler programs' - Selects, combines and uses internet services. - Demonstrates responsible use of technologies and online services and knows a range of ways to report concerns.	- Understands how search engines rank search results and test some of these systems. - Understands how to construct static web pages using HTML and CSS. - Understands data transmission between digital computers over networks including the internet i.e. IP addresses and packet switching.	- Understands how search engines rank search results. - Clearly evaluates these systems. - Understands how to construct static web pages using HTML and CSS. - Designs and creates own web pages for a purpose. Understands data transmission between digital computers over networks including the internet i.e. IP addresses and packet switching.
	Component: Information Technology							
	Year A & B	-Use computer devices and software to create, research and store data. (Children represent their own ideas, thoughts and feelings through design and technolog. (EAD - Being Imaginative ELG) -Uses drawing software to design a poster for a purpose. -Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes. (Tech ELG)	- Uses software under supervision to create, store and edit digital content using appropriate files and folder names. - Understands that people interact with computers. - Shares their use of technology in school. - Knows common use of information technology outside school. - Talks about their work and makes changes to improve it.	- Uses technology with increasing independence to purposely organise digital content. - Shows awareness of the quality of digital content collected. - Uses software to manipulate and present digital content: data and information. - Shares their experiences of technology in school and outside school. - Talks about their work and makes some improvements to solutions based on feedback received.	- Collects, organises and presents data and information in digital content. - Creates digital content to achieve a given goal through combining software, packages and internet services to communicate with a wider audience e.g blogging. Makes some appropriate improvements to solutions based on feedback received and can comment on the success of the solution.	- Makes judgements about digital content when evaluating and assigning it for a given audience. - Recognises the audience when designing and creating digital content. - Understands the potential of information technology for collaboration when computers are networked. - Uses criteria to evaluate the quality of solutions. - Can identify improvements, making some refinements to the solution and future solutions.	- Evaluates the appropriateness of digital services, internet services and application software to achieve given goals. - Recognises ethical issues surrounding the application of information technology beyond school. - Designs criteria to critically evaluate the quality of solutions. - Uses the criteria to identify improvements, and can make appropriate some refinements to the solution.	- Justifies the choice of, combines and uses multiple digital devices, internet services and application software to achieve given goals. - Evaluates the trustworthiness of digital content. - Knows how the use of technology can impact on society. - Begins to design criteria for users to evaluate the quality of solutions and uses the feedback to identify some improvements.