# St Peter's Catholic School
*Faith is our Foundation*

## 2022-2023 Year 8 Curriculum and Assessment Plan for Computing

**The curriculum and assessment of pupils at this stage of education has been carefully designed to**

By the end of year 8 students will have studied a wide and varied mixture of computing which will further advance their understanding of information technology, digital literacy and computer science. The different units will further prepare students to be more confident users and allow them a better understanding of not only how to use computers to further their studies within all subjects, but it will also allow them to be more knowledgeable users in the outside world. The assessments and the curriculum will build on the progress they made from year 7 and will prepare them for the units in year 9.

| Half Term 1: | Subject specific skills being developed: | Half Term 2: | Subject specific skills being developed: | Half Term 3: | Subject specific skills being developed: |
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| **All pupils will know:**<br><br>Cyberbullying (IT)<br><br>**All pupils will be assessed by:**<br><br>Online assessments.<br><br>**Impact- Why do we teach this?**<br><br>•  understand a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.<br><br>As students move into Year 8 they will begin to be exposed to computers much more. This will involve them doing further online research for most subjects as well as accessing school work through the portal.<br><br>To add to this, students will also be moving closer to an age where they may be creating more social media and online gaming accounts. It is vital that E-Safety and Cyberbullying is delivered to students at this stage to set them up with a good ethical approach to computers. It will also give all students confidence of what support is in place for them when using online content. | ● Protecting their digital footprint<br>● Keeping themselves safe online<br>● Dangers of social media and the internet<br>● Impacts of cyberbullying<br>● Protecting their personal information when online<br>● Where to go to seek help<br><br>**Reading Skills needed for this unit:**<br>**Key Vocabulary:**<br><br>Digital Footprint, Social Network, Sharing, CEOP, Describe, Safety<br><br>**Opportunity for cross-curricular skill development**<br>● All subjects – the ethical approach to this topic will teach students how to treat others online as well as keeping themselves | **All pupils will know:**<br><br>HTML (CS/IT/DL)<br><br>**All pupils will be assessed:**<br><br>Webpage and online assessments.<br><br>**Impact - Why do we teach this?**<br><br>•  create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability<br><br>As well as building on previous knowledge this will prepare students for future computer science projects.<br><br>Students will need to understand the design behind web sites to help them design their own webpage. Taking users into consideration is a fundamental part of the creative side of Computer Science. This will ensure the students consider the kind of formatting tags they use in their design and the layout of their page.<br><br>This will also allow students to use online resources to find HTML tags to re-use within their own design. This will encourage students to further push their understanding of the topic and highlight the importance of reusable code. They will also be required to think for themselves to revise how the HTML tags they've researched can be manipulated for their own design.<br><br>The webpages they create will need to work as expected. This will mean the students need to be able to troubleshoot and amend their own work as they go along using a variety of resources to support them. This will include peer assessments, enabling students to be able to think critically when assessing others work.<br><br>As well as teaching students to be confident when writing in HTML and CSS, it will also allow them to develop their understanding of how many computer related projects work. This will be a skill that they will use regularly in this subject, as well as many other subjects in the school. It will | ● What is HTML<br>● Formatting tags<br>● Adding hyperlinks to webpages<br>● Adding images to webpages<br>● Designing and building webpages<br>● Using cascading style sheets<br>● Fixing incorrect HTML<br><br><br><br><br><br>**Reading Skills needed for this unit:**<br>**Key Vocabulary:**<br>HyperText Markup Language, Tags, Triblueshooting, Design, Evaluate, Explore, Describe,<br><br>**Opportunity for cross-curricular skill development**<br>● Science – project-based work including designing and evaluation<br>● Maths – Logic and troubleshooting | **All pupils will know:**<br><br>Python **Basics (CS/DL)**<br><br>**All pupils will be assessed:**<br><br>Documented Python code and online assessments.<br><br>**Impact - Why do we teach this?**<br><br>At KS3 students should be taught to: Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.<br><br>use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions.<br>This topic builds on the basic knowledge and understanding of programming from their Primary education. Students' digitally literacy is developed by enabling them to use, express themselves, and develop their ideas through information technology, which will be progressively built on in subsequent years to reach a level suitable for the future workplace and as active participants in a digital world.<br><br>Data types will have been used, but not taught explicitly in Year 7. At this stage they are introduced, and their use and application addressed. Students will have used strings and integers but now need to be able to select the correct data type for a given value and cast data types where necessary.<br>Simple outputs and inputs have been used; students will move on to combining these with values and variables to make more meaningful user messages. This will improve the value and understanding of the code for the user.<br>The use of variable requires the use of the assignment operator. Students will make use of this with multiple variables in their code, building on their use of one or two variables in their code in Year 7. Students should begin to see that variables give their code a flexibility that hard-coding value does not. Their confidence in their use of variables should further increase in Year 9 to the point that | ● The IDE<br>● Using script and interactive mode.<br>● Arithmetic operators: + - * /<br>● Comparison: == > >= < <=<br>● Data types: integer, string, float<br>● Casting data types.<br>● Programming inputs and outputs.<br>● Using comments.<br>● Assignment operator: =.<br>● Variable assignment and use.<br>● Language syntax.<br>● Error diagnostics.<br>● Selection.<br><br>**Reading Skills needed for this unit:**<br>**Key Vocabulary:**<br>Iteration, Sequence, Conditional Statement, Variable, Explore, Design, Develop, Troubleshoot, Analyse.<br><br>**Opportunity for cross-curricular skill development**<br>● All subjects – Print layout formatting, formatting.<br>● Maths – Number (<br>● English – Writing (considering how their writing |

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| | safe and where they can go to seek support. This is relevant for all subjects delivered in key stage 3. | also be a skill that many students will be able to develop and use in future employment or further education. | • DT and Art – the creative side of computer science when understanding the use of colours and effective layout. | they will be able to identify where the use of variables will improve their code. | reflects the audiences and purposes for which it was intended) • D&T – Technical Knowledge |
| **Half Term 4:**<br><br>**All pupils will know:**<br><br>Viruses and Encryption (CS)<br><br>**All pupils will be assessed:**<br><br>Cypher creation, application and online assessments.<br><br>**Impact - Why do we teach this?**<br><br>This will allow students to become more responsible, competent, confident and creative users of info9rmation technology. It wlll also make them more aware of how to use computers, not just in school but at home, more safely and securely.<br><br>Students will be taught how devices can be attacked and how they can protect their computers. They will also become more aware of how vital encryption is to modern day data transfer and will know how to check that apps and websites they're using are safe. This will encourage a responsible, safe and respectful use of technology out of school. | **Subject specific skills being developed:**<br>• understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally<br>• understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; | **Half Term 5:**<br><br>**All pupils will know:**<br><br>Hardware & Software (CS)<br>E-Waste & Recycling (CS/IT/DL)<br><br>**All pupils will be assessed:**<br><br>Online assessments and E-waste infographic, annotated.<br><br>**Impact - Why do we teach this?**<br><br>This unit will allow students to further understand the architecture of computers and will allow them to see how various devices are considered to be computers such as smartphone, games consoles, laptops, PC's etc. This will help the students understand how wide the impact of computing is on the modern world.<br><br>They will learn the basic inner workings of a computer and be able to discuss and explain some of the more common hardware devices as well as knowing the difference between these and software.<br><br>This will expand their effective use of IT and the Internet to develop a better understanding of Computer Science.<br><br>They will also study the environmental impact this rapid growth of hardware and software is having on the planet. This will raise awareness of their carbon footprint & proactive in their choices to reduce this in this digital world. This further the students to be kind and considerate to others making for a responsible digital citizen | **Subject specific skills being developed:**<br>• understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems<br>• understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits<br>• create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability | **Half Term 6:**<br><br>**All pupils will know:**<br><br>Spreadsheets Introduction (DL)<br><br>**All pupils will be assessed:**<br><br>Annotated spreadsheets and online assessments<br><br>**Impact- Why do we teach this?**<br><br> This topic builds on the knowledge and understanding of spreadsheets from Year 7. Student's digitally literacy is developed by enabling them to use, express themselves, and develop their ideas through information technology, which will be progressively built on in Year 9 to reach a level suitable for the future workplace and as active participants in a digital world.<br>Students must ensure that they think about the audience and purpose of the digital products produced and ensure that the formatting applied is suitable. They need to increasingly build on the breadth of formatting techniques they possess in order to apply more advanced formatting, further enhancing their digital literacy skills progressively through their secondary education, which can be applied to digital products across their subjects.<br>Spreadsheet key terms must be highlighted, and those already encountered re-visited, throughout this topic, as they are referenced repeatedly. Students should be able to access cells through their cell reference and be able to choose where to use an absolute cell reference. The ease of further modifying the spreadsheet should be considered during its development. The type of cell referencing adopted can affect the usability and scalabilty of spreadsheets.<br>More complex formulae to those used in Year 7 are developed, using multiple arithmetic operators and multiple cell references to perform a calculation. | **Subject specific skills being developed:**<br>• Conditional formatting.<br>• Absolute cell referencing.<br>• Autofill using absolute cell referencing.<br>• Formulae to achieve an outcome.<br>• Functions that take two arguments.<br>• Formatting print output.<br>• A variety of appropriate graphs and charts.<br>• Applying filters and sorting data. |
| | **Reading Skills needed for this unit:**<br>**Key Vocabulary:**<br><br>**Encryption, Virus, Malware, Anti-Virus, Decrypt, Cipher** | | **Reading Skills needed for this unit:**<br><br>**Key Vocabulary:**<br><br>Input, Process, Output, Device, Memory, Storage, RAM, ROM, CPU, Clock Speed, Optical, Magnetic, Solid State, Colossus, Transistors, Moore's Law, Software | There are a multitude of functions available within spreadsheets to provide the user with a quick means of performing calculations that are commonly used. Students have encountered some of the more basic functions taking only one argument in Year 7 and now need to develop the ability to apply more complex function that take two arguments.<br>The ability to actively produce a printout with an appropriate layout needs to be engrained, and applied across the software packages. The nature and complexity of spreadsheets means that many aspects must be considered in order to produce an appropriate printout. Numerous settings, building on those implemented in Year 7, | **Reading Skills needed for this unit:**<br><br>Key Vocabulary:<br>Cell, Rows, Columns, Value, Worksheet, Formula, Explore, Evaluate, Desing, Analyse |

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| | | | , Electronic Waste, Devices, Copper, Ethical, Developed, Infographic. | |
| | **Opportunity for cross-curricular skill development**<br>● All subjects – teaching students how to safely store work and to protect any devices they are using.<br>● History – Bletchley Park**.** | | **Opportunity for cross-curricular skill development**<br>● D&T – Technical Knowledge<br>● Maths – numeracy and processing<br>● Geography – environmental impacts | will need to be altered to achieve an appropriate output. Students will increasingly build on the breadth of the print formatting techniques they possess in order to apply more advanced formatting across a variety of software packages, further enhancing their digital literacy skills. Students have generated some graphs and charts with meaning by ensuring that axes are labelled, titles are relevant, scales appropriate, and that the chart type is suitable to present the data set being used. They must use these skills to work with more complex data sets and more complex graphs, along with enhanced formatting. They will build on the complexity of data sets, the number of chart types used, and the accuracy of the output produced in Year 9. | **Opportunity for cross-curricular skill development**<br>● All subjects – Print layout formatting, formatting.<br>● Maths – Statistics<br>● Science – Analysis and evaluation<br>● Geography - Analysing and interpreting different data sources |

**Ensuring this curriculum meets the needs of all pupils:** this curriculum has been designed to ensure pupils from all starting points will develop the key curriculum skills and knowledge identified. The curriculum design ensures that each unit forms part of the overall learning journey and there are opportunities for revisiting skills and linking together key pieces of knowledge. Whole Academy policies and practices are followed to tailor the delivery of the curriculum for individuals and groups of students. For example, SEND students have individual learning profiles that outline needs/strategies to be used, Ongoing formative assessment and clear summative assessment points allow individual staff and departments to identify misconception and adjust curriculum appropriately.

**Enrichment opportunities:**
● Coding Club
● Visits/Trips

**Career opportunities/ links: Software Development / Software Engineers / Web Developer / Cybersecurity / Engineer / Administrator / Data Manager**