



**ST BERNARD'S  
HIGH SCHOOL**

# Curriculum Guide

## Computing

### 2025 - 26



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## Curriculum Intent

At St. Bernard's, our computing curriculum is designed to provide students with a comprehensive understanding of the digital world that aligns with our Catholic values and moral principles. Our intent is to:

1. **Nurture Digital Citizens:** To empower students to become responsible, ethical users of technology who can navigate and contribute to an increasingly digital society. We aim to instil a sense of digital responsibility, encouraging students to consider the implications of their online actions in line with Catholic social teaching.
2. **Drive Engagement and Innovation:** To inspire a love for computing by making learning engaging, relevant, and reflective of real-world applications. We strive to foster creativity and innovation through project-based learning, enabling students to work collaboratively and think critically.
3. **Future-Ready Skill Development:** To equip students with essential computing skills needed for the future workforce. We provide a robust curriculum that encompasses programming, data management, algorithms, and digital literacy, ensuring students are prepared for further education or employment in a technology-driven economy.
4. **Emphasise Inclusivity:** To create an inclusive environment where all students, irrespective of their backgrounds or abilities, can thrive in computing. We aim to promote diversity in technology by encouraging all students, particularly underrepresented groups, to participate fully in our computing programme.

## Head of Mathematics, Computing, Business & Economics Faculty

Mr J Miller

### Lead Teacher in Computing

Mrs M Hopgood-Hall

# Year 7

The Year 7 curriculum introduces students to foundational computing concepts through 5 units, each aligned with specific threads such as programming, data, media, and networks. The curriculum is designed to be accessible, diverse, and evidence-informed, supporting a smooth transition from primary to secondary computing.

Regular assessments throughout the year track progress and ensure understanding, supported by ongoing revision and practice to reinforce learning.

**Number of lessons per fortnight:** 1

**Skills developed:** Digital design, cross-application workflow, safe and respectful use of school networks, understanding of data transmission, IP addresses, and the Internet of Things, research, evaluating source credibility, digital publishing, sequence, selection, iteration, variables, and problem-solving, formulas, functions, sorting, searching, and conditional formatting.

**Classes:** Students are taught in Mixed Ability Classes.

**Essential equipment:** Pen, pencil, highlighter, ruler.

**Extracurricular and enrichment opportunities:** Code Club, BEBRAS Challenge, First Lego League Challenge

**Careers curriculum:** '[I Belong in Computing](#)' webinars, real-world scenarios, links to local industry, virtual Q&A via 'I'm a Computer Scientist', industry recognised iDEA award.

	Content studied	Literacy focus	What parents can do to help
<b>Autumn Term</b>	<p>Unit 1: Clear Messaging in Digital Media</p> <p>In unit 1, pupils will use a range of skills across several pieces of software. The unit is designed so that pupils can apply skills that they may have previously learnt as well as those learnt in the unit. end of the unit, they will also be able to use the school network safely and respectfully. During the unit pupils will use a range of different skills across several pieces of software that will be transferable to many other units throughout the curriculum.</p>	<p>Reading: Pupils interpret design briefs and evaluate examples of posters and slide decks.</p> <p>Writing: They write concise, persuasive text for posters and slides.</p> <p>Speaking &amp; Listening: Pupils may present their digital products and provide peer feedback, developing communication and evaluative language.</p>	<p>Encourage your child to explore design tools like Google Slides or Canva at home.</p> <p>Discuss what makes a message clear and persuasive—look at posters or adverts together.</p> <p>Help them practice presenting their digital work to build confidence in communication.</p>
	<p>Unit 2: Computer Networks and Data Transmission</p> <p>In unit 2, pupils will explore the impact networks have on our daily lives. They will define what a network is and explore the benefits of networking, before covering how data is transmitted across networks using protocols. They will investigate different types of network and hardware required. They build on lessons learnt about privacy in KS2 and understand how default sharing of</p>	<p>Reading: Pupils read technical explanations of networks, protocols, and the internet.</p> <p>Writing: They may write definitions, summaries, or explanations of how networks function.</p> <p>Speaking &amp; Listening: Group discussions and presentations help pupils articulate their understanding of abstract concepts like IP addresses and the Internet of Things.</p>	<p>Talk about how your home internet works—explain Wi-Fi, routers, and devices connected to the network.</p> <p>Watch short videos together on how the internet works (e.g., IP addresses, data packets).</p> <p>Encourage curiosity by asking your child to explain what they've learned about networks.</p>

	data collects personal information about users.		
<b>Spring Term</b>	<p><b>Unit 3: Using Media to Gain Support for a Cause</b> In unit 3, pupils develop their understanding of information technology and digital literacy skills. They will use the skills learnt across the unit to create a blog post about a real-world cause that they would like to gain support for. This unit progresses pupils' knowledge and understanding of licensing and legal issues surrounding the use of online sources of information. They will also gain an understanding of how to apply techniques to help determine the reliability of a source.</p> <p><b>Unit 4: Using Fundamental Programming Constructs in a Block-Based Language</b> In unit 4, pupils will build their confidence and knowledge of the key programming constructs (sequence, iteration, selection and variables). Learners will use Scratch to explore the key programming constructs firstly through editing pre-existing code and then by developing their own programs.</p>	<p><b>Reading:</b> Pupils evaluate the credibility of online sources and understand licensing and copyright.</p> <p><b>Writing:</b> They plan and write a persuasive blog post, using appropriate tone and structure.</p> <p><b>Speaking &amp; Listening:</b> Pupils may pitch their cause or blog idea, practicing persuasive speaking and listening to peer feedback.</p> <p><b>Reading:</b> Pupils read and interpret code, instructions, and problem scenarios.</p> <p><b>Writing:</b> They write pseudocode or annotate code to explain logic and structure.</p> <p><b>Speaking &amp; Listening:</b> Collaborative debugging and problem-solving discussions enhance technical vocabulary and reasoning skills.</p>	<p>Discuss causes your child cares about and help them research reliable sources.</p> <p>Talk about how to spot trustworthy websites and avoid misinformation.</p> <p>Review their blog drafts and offer feedback on clarity, tone, and persuasiveness.</p> <p>Encourage your child to use Scratch at home to experiment with creating simple games or animations.</p> <p>Ask them to explain how their code works—this reinforces their understanding.</p> <p>Celebrate small wins in their programming projects to build confidence.</p>
<b>Summer Term</b>	<p><b>Unit 5: Data Modelling</b> By the end of unit 5, pupils will be able to model data within a spreadsheet. Pupils will progress from using basic formulas to using inbuilt functions. Pupils will apply sorting and searching techniques to data and explore how conditional formatting can be used to present data effectively. They will employ the principle of storing data in variables, learnt in previous programming units, to process this data into useful information to model real-life data sets and find out facts from collected data.</p>	<p><b>Reading:</b> Pupils interpret data sets and instructions for spreadsheet tasks.</p> <p><b>Writing:</b> They may write explanations of their data models or describe trends and patterns.</p> <p><b>Speaking &amp; Listening:</b> Pupils discuss their findings and justify their data choices, promoting analytical language use.</p>	<p>Show your child how spreadsheets are used in real life (e.g., budgeting, shopping lists).</p> <p>Let them help with simple data tasks at home, like tracking expenses or planning a trip.</p> <p>Encourage them to explain how formulas and functions work in their spreadsheet projects.</p>

### **Helpful books/websites:**

Computing for KS3: Student Book 1 by Mark Dorling and George Rouse (PG Online)

How to Code in 10 Easy Lessons by Sean McManus

BBC Bitesize Computing KS3: <https://www.bbc.co.uk/bitesize/subjects/zvc9q6f>

Scratch: <https://scratch.mit.edu/>

Micro:bit: <https://microbit.org/>

Common Sense Media – Digital Citizenship: <https://www.commonsense.org/education/digital-citizenship>

### **Opportunities for wider reading/research:**

Hello Ruby: Adventures in Coding by Linda Liukas

Computational Fairy Tales by Jeremy Kubica

# Year 8

In Year 8, pupils continue to build on the foundational computing knowledge developed in Year 7, progressing through increasingly complex and creative applications of digital technology. The year begins with mobile app development, where pupils use block-based programming to design and build their own apps, applying computational thinking and problem-solving skills in a real-world context.

Next, pupils explore computer systems and data science, learning how software and hardware interact, and how artificial intelligence is influencing modern computing. This is followed by a unit on web development, where pupils use HTML and CSS to create functioning websites and understand how search engines organise and retrieve information.

In the fourth unit, pupils are introduced to Python programming, transitioning from block-based to text-based coding. They develop programs using input/output, selection, and iteration, culminating in a final project that consolidates their learning. The year concludes with a focus on data representation, where pupils learn how binary is used to represent text and numbers, and explore basic cryptography and data measurement.

This sequence ensures a smooth progression from visual to text-based programming, while deepening pupils' understanding of how digital systems work and how data is used and protected. Each unit reinforces digital literacy, creativity, and analytical thinking in preparation for Year 9.

## Number of lessons per fortnight: 1

**Skills developed:** Event-driven programming, user interface design, debugging, understanding of computer architecture and operating systems, awareness of artificial intelligence and its societal impact, HTML and CSS coding, web structure and navigation, search engine optimisation, binary and decimal number conversion, character encoding, cryptography basics, text-based programming using Python, input/output handling, selection, iteration, and control structures, logical reasoning, and computational thinking.

**Classes:** Students are taught in Mixed Ability Classes.

**Essential equipment:** Pen, pencil, highlighter, ruler.

**Extracurricular and enrichment opportunities:** Code Club, BEBRAS Challenge, First Lego League Challenge

**Careers curriculum:** '[I Belong in Computing](#)' webinars, real-world scenarios, links to local industry, virtual Q&A via 'I'm a Computer Scientist', industry recognised iDEA award.

	Content studied	Literacy focus	What parents can do to help
<b>Autumn Term</b>	Unit 1: Mobile App Development Unit 1 takes pupils from designer to developer in order to create their own mobile app. Learners will have an opportunity to build on the programming concepts they used in previous units to undertake a project. This unit progresses pupils' understanding of programming constructs in a new block-based programming environment.	Reading: App design briefs and user requirements.  Writing: App documentation and user instructions.  Speaking & Listening: Presenting app ideas and receiving feedback.	Ask your child to explain their app idea and how it works.  Encourage them to test their app with family members.  Discuss how apps solve real-world problems.
	Unit 2: Computer Systems and Data Science In unit 2, pupils will explore the layers of computer systems from programs to the physical components that store and execute these programs. They will	Reading: Technical texts on system architecture and AI. Writing: Explanations of system components and AI applications.	Talk about how devices at home work (e.g., phones, smart speakers).  Watch documentaries or videos on AI and discuss their impact.

	discover the fundamental binary building blocks that make up computer systems and how systems are evolving for developments such as AI.	Speaking & Listening: Discussions on ethical implications of AI and system design.	Encourage your child to explain how a computer processes information.
<b>Spring Term</b>	<p>Unit 3 – Developing for the Web In unit 3, pupils will explore the technologies that make up the internet and WWW. Starting with an exploration of the building blocks of the WWW, HTML, and CSS. They will construct a fully functioning website and discover how websites are catalogued for effective retrieval by search engines. This unit helps pupils understand how the web works, building skills that support future learning across subjects and in their future careers.</p> <p>Unit 4: Introduction to Python Programming Unit 4 introduces pupils to text-based programming with Python. This unit builds on pupils' prior understanding and experience of key programming constructs that they have previously applied through block-based programming activities. They will explore how these same constructs can be applied in a text-based programming language. Pupils will consolidate these skills in a project at the end of the unit.</p>	<p>Reading: HTML/CSS syntax and web content.</p> <p>Writing: Structured content for web pages.</p> <p>Speaking &amp; Listening: Explaining design choices and presenting websites.</p> <p>Reading: Python syntax and code examples.</p> <p>Writing: Code comments and program explanations.</p> <p>Speaking &amp; Listening: Debugging discussions and code walkthroughs.</p>	<p>Let your child show you how they build a webpage.</p> <p>Explore websites together and discuss what makes them effective.</p> <p>Encourage them to write a simple blog or portfolio site.</p> <p>Encourage your child to explain their Python code.</p> <p>Let them teach you how to write a simple program.</p> <p>Use platforms like Replit or Trinket to practice coding at home.</p>
<b>Summer Term</b>	<p>Unit 5: Data Representation – text and numbers In unit 5 pupils will be introduced to binary digits and how they can be used to represent text and numbers. Pupils will perform conversions between binary and decimal numbers and how binary can be used to represent characters. They will explore how cryptography can be used to protect data. Pupils also learn the prefixes used for measuring representation size, such as kilo, mega and giga.</p>	<p>Reading: Binary tables, data conversion guides.</p> <p>Writing: Descriptions of binary processes and encryption.</p> <p>Speaking &amp; Listening: Explaining binary conversions and cryptographic methods.</p>	<p>Practice binary-to-decimal conversions together.</p> <p>Discuss how data is stored in devices (e.g., file sizes, memory).</p> <p>Explore simple encryption techniques like Caesar ciphers.</p>

**Helpful books/websites:**

Computing for KS3: Student Book 2 by Mark Dorling and George Rouse

DK Coding Projects in Python

Code.org: <https://code.org/>

W3Schools HTML/CSS: <https://www.w3schools.com/>

Python for Beginners: <https://www.python.org/about/gettingstarted/>

Tynker: <https://www.tynker.com/>

**Opportunities for wider reading/research:**

Girls Who Code: Learn to Code and Change the World by Reshma Saujani

Code: The Hidden Language of Computer Hardware and Software by Charles Petzold

# Year 9

In Year 9, pupils deepen their understanding of computing by applying their knowledge to more complex, creative, and real-world contexts. The year begins with 3D animation, where pupils use industry-standard tools to model, texture, and animate digital artefacts, building on their prior experience with 2D graphics. They then move into cybersecurity, learning how to identify and protect against digital threats such as malware and social engineering—an essential skill in today's connected world.

Next, pupils explore data science, using real-world datasets to identify patterns and solve problems through the PPDAC cycle. This unit strengthens their analytical thinking and introduces them to ethical considerations around data use. They then study data representation, discovering how binary is used to encode images and sound, and how compression affects quality and file size. The year concludes with a return to Python programming, where pupils work with sequences like lists and strings to manipulate and process data.

This progression from creative media to technical programming and data analysis ensures a well-rounded computing education. Pupils build on the programming, media, and data skills developed in Year 8, preparing them for more advanced computing topics in Year 10 and beyond.

**Number of lessons per fortnight:** 1

**Skills developed:** 3D modelling, animation, lighting and rendering, understanding of cybersecurity threats and protection strategies, data collection and analysis, data visualisation, binary representation of media, image and sound editing, Python programming with lists and strings, iteration, and data manipulation.

**Classes:** Students are taught in Mixed Ability Classes.

**Essential equipment:** Pen, pencil, highlighter, ruler.

**Extracurricular and enrichment opportunities:** Code Club, BEBRAS Challenge, First Lego League Challenge

**Careers curriculum:** '[I Belong in Computing](#)' webinars, real-world scenarios, links to local industry, virtual Q&A via 'I'm a Computer Scientist', industry recognised iDEA award.

	Content studied	Literacy focus	What parents can do to help
<b>Autumn Term</b>	Unit 1: 3D Animation In unit 1 pupils will discover how to create 3D animations using industry-standard software. They will gain a greater understanding of how 3D animation is used to make the media products that we consume. They will explore the basics of modelling, texturing, animating to create 3D models. By the end of this unit, pupils will have a firm understanding of the fundamentals of media creation to allow them to tackle more demanding and involved projects	Reading: Software instructions and animation briefs.  Writing: Descriptions of animation processes and project evaluations.  Speaking & Listening: Explaining design choices and giving peer feedback.	Encourage your child to explore free 3D tools like Blender.  Watch animated films and discuss how scenes might have been created.  Ask them to explain their animation process and goals.
	Introduction to Cybersecurity Unit 2 takes pupils on a journey of discovery about techniques used by cybercriminals to steal data, disrupt systems and infiltrate networks. They will consider the value of data to organisations and what it is used for. They will look	Reading: Case studies and threat descriptions.  Writing: Reports on cyber threats and safety strategies.  Speaking & Listening: Debates on digital safety and ethical hacking.	Discuss online safety and privacy at home.  Review your child's digital habits and security settings together. Explore news stories about cybersecurity and discuss their implications.

	at social engineering techniques and common cybercrimes. They understand the scale of threats posed to themselves, organisations and even Governments. They identify what these threats are but, importantly, steps they can implement to stay safe and protect data. This can be on a personal level and also in the world of work.		
<b>Spring Term</b>	<p>Unit 3: Using Data Science In unit 3, pupils will discover how to use data to investigate problems and make changes to the world around them. Pupils will be exposed to both global and local data sets and gain an understanding of how visualising data can help with the process of identifying patterns and trends.</p> <p>Unit 4: Data Representation – images and sound In this unit, pupils will focus on digital media such as images and sounds, and discover the binary digits that lie beneath these types of media. They will explore how images and sound can be manipulated and consider the link between quality of images and sound and the resulting file size.</p>	<p>Reading: Data reports and visualisations.</p> <p>Writing: Analytical summaries and data-driven recommendations.</p> <p>Speaking &amp; Listening: Presenting findings and discussing data ethics.</p> <p>Reading: Technical explanations of binary encoding.</p> <p>Writing: Descriptions of media manipulation and compression.</p> <p>Speaking &amp; Listening: Explaining how digital media is stored and edited.</p>	<p>Encourage your child to explore data in everyday life (e.g., weather, sports).</p> <p>Help them collect and analyse simple data sets at home.</p> <p>Discuss how data influences decisions in business, health, or politics.</p> <p>Let your child experiment with image or audio editing software.</p> <p>Discuss how file size affects media quality (e.g., streaming vs. downloads).</p> <p>Explore how digital media is used in advertising or entertainment.</p>
<b>Summer Term</b>	<p>Unit 5: Python Programming with Sequences of Data Unit 5 builds on pupils' prior experience of writing Python programs that handle input and output, use simple arithmetic expressions and control the flow of execution through selection and iteration structures. In this unit pupils will explore how data can be represented and processed in sequences, such as strings and lists. Pupils will progress from operations that range from accessing an individual element to manipulating an entire sequence.</p>	<p>Reading: Python syntax and code examples.</p> <p>Writing: Code comments and program explanations.</p> <p>Speaking &amp; Listening: Debugging discussions and code walkthroughs.</p>	<p>Encourage your child to explain their code and logic.</p> <p>Let them teach you how to write a simple Python program.</p> <p>Use online platforms like Replit or Trinket to practise coding together.</p>

**Helpful books/websites:**

Computing for KS3: Student Book 3 by Mark Dorling and George Rouse

Python Programming for the Absolute Beginner by Michael Dawson

Replit: <https://replit.com/>

Khan Academy – Computer Science: <https://www.khanacademy.org/computing>

CyberFirst: <https://www.ncsc.gov.uk/cyberfirst/overview>

Blender (3D Animation): <https://www.blender.org/>

**Opportunities for wider reading/research:**

The Thrilling Adventures of Lovelace and Babbage by Sydney Padua

Cybersecurity for Beginners by Raef Meeuwisse