the constellation

Computing
Curriculum Booklet
2020-2021

Our Vision and Approach in Computing

An in-depth computing curriculum is delivered at Royal Greenwich Trust School which equips students to use computational thinking and creativity to understand and change the world. Through the study of Computing, students will also gain insights into both natural and artificial systems.

The core of Computing is Computer Science in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Through this knowledge and understanding, students are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that students become digitally literate and are able to use and express themselves to develop their ideas through Information and Communication Technology. This will be taught to a level that is suitable for the future workplace and as active participants in a digital world.

What students learn

Pupils will be taught to:
- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems;
- understand several key algorithms that reflect computational thinking (for example, ones for sorting and searching) and to use logical reasoning to compare the utility of alternative algorithms for the same problem;
- 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;
- understand simple Boolean logic (for example, AND, OR and NOT) and some of its uses in circuits and programming; understand how numbers can be represented in binary and be able to carry out simple operations on binary numbers (for example, binary addition, and conversion between binary and decimal);
- understand the hardware and software components that make up computer systems and how they communicate with one another and with other systems;
- 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;
- undertake creative projects that involve selecting, using and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users;
- create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability;

Year 7

Understand the hardware and software components that make up computer systems.

Understand a range of ways to use technology safely, respectfully, responsibly, and securely.

Year 8

Understand the hardware and software components that make up computer systems, and how they communicate with one another.

Understand a range of ways to use technology safely, respectfully, responsibly, and securely, including protecting their online identity and privacy.

Year 9

Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems

Recognise inappropriate content, contact, conduct and know how to report concerns.

What students learn

|	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	Introduction and Familiarisation	E-safety	Understanding the machine	Using an application to complete a task	Binary	Algorithms/Intro to programming
Year 8	E-Safety	Networks	Binary	Memory/Storage	Databases	Algorithms/Intro to programming
Year 9	Algorithm Thinking	Data Representation Introduction to Python programming	Networks Programming in Python	Preparation for independent projects	Independent project	Independent project
Year 10	Stages of project lifecycle Mitigating risks for project	Planning and reviewing project phases Creating, updating, deleting and using data	Presenting information in a meaningful way	Final evaluation for a project Collecting and storing data	Cyber security – threats and preventions Legislation and data reliability	Exam.

Supporting your child in Computing

- Encourage your child to look over Powerpoints for lessons and work sheets.
- Practise skills learnt on home computer every week.
- Read articles on the various aspects of computing (e.g. e-safety).
- Check your child's knowledge with quizzes and talk about the various topics linking them to the real world.
- Use the resources included in this guide to assist your child.
- Encourage your child to start a computing project such as programming. Get the teachers at school to check this.
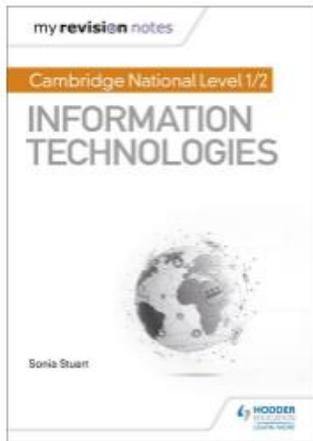- Make sure they learn the keywords for the topic.

Recommended books
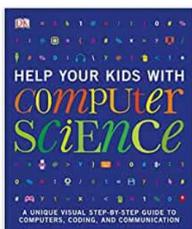
This book is extremely visual and easy to understand. Can be bought on Amazon.
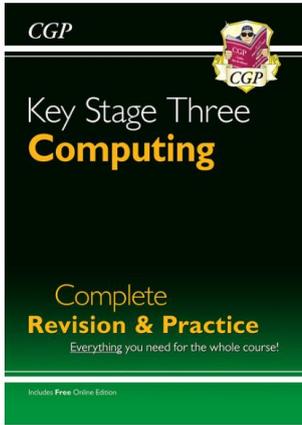
New Key Stage 3 Computing – Complete Revision and Practice. Can be bought on Amazon.

For Key Stage 4 OCR IT – Revision notes to help with exam.

Recommended Websites

This website is great for basics in Computing and for higher level:

https://blog.teachcomputing.org/computing-resources-for-home-learning/

This website looks at various topics covered in the curriculum:

https://www.bbc.co.uk/teach/ks3-computer-science/zmscmfr

This site will assist your child to learn coding and other topics:

https://www.tecoed.co.uk/index.html

This site has lots of worksheets on the various topics covered:

https://www.twinkl.co.uk/resources/keystage3-ks3-ict/ks3-computing-secondary/computer-science-ks3-computing-secondary