



COMPUTING

Year 9

What are the aims and intentions of this curriculum?

The aim of our Key Stage 3 Curriculum is to ensure students experience a broad and balanced experience in Computing, which prepares them effectively for the workplace and as active participants in the digital world. The curriculum offers a balanced approach which will equip students to use computational thinking, principles of information, how digital systems work and how to put this knowledge to use through programming, the creation of systems and a range of content. This curriculum also ensures that students can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems and ultimately are responsible, digitally literate, confident and creative users of information and communication technology.

The national curriculum for computing aims to ensure that all students can understand and apply the fundamental principles and concepts of computer science, including logic, algorithms and data representation. It also covers online safety, with progression in the content to reflect the different and escalating risks that young people face as they get older. This includes how to use technology safely, responsibly, respectfully and securely, how to keep personal information private, and where to go for help and support.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	Databases Theme: Healthy Eating – Eat Well – Play Well- Fruits	<p>In this unit students will be engaging in activities using Microsoft Access where they will progress by making a flat file database with over 100 fruits organised into colours groups, vitamins, and calories. Students will learn to add images, make a form view of the table, learn to sort and search using Boolean expressions and finally convert their queries into PDF reports</p> <ul style="list-style-type: none"> - Output - Fields - Queries - Add images - Form view - Reports 	<p>Understand the difference between Spreadsheets and Databases and why databases are extremely important. Learn how to navigate a database via the table, form, queries and report view. Learn to customise the database by adding images of the products on the form view. Learn to add data input parameters.</p> <ul style="list-style-type: none"> - Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems - Undertake creative projects that involve selecting, using, and combining 	<p>A practical assessment where students design their own fruits database.</p> <p>Read Vocabulary</p> <p>Websites: https://support.microsoft.com/en-gb/office/video-what-is-access-f2338765-ff59-4cfc-b8ba-74059fcb1874 https://youtu.be/eXiCza050ug</p>

		<ul style="list-style-type: none"> - Design view - Tables - Charts - Searching & Sorting Database 	<p>multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users</p> <p>Programmer Software Engineer Meterologist</p>	<p>Knowledge Organiser Database Fruits Work booklet</p>
<p>Autumn 1</p>	<p>Theme: Online Safety</p>	<p>In this short unit students are reminded about staying safe online, using emails, social media and completing tasks remotely.</p> <ul style="list-style-type: none"> - Acceptable use policy - File types - Naming conventions - File management - Backup - Social networking - Cyberbullying - Privacy - Password - Identify theft - Phishing - Search engine cookies - Gambling - Sexting - Grooming - pornography - PIN - AI - Honesty - Integrity - Ways to use technology safely 	<p>Developing Skills to remaining safe while online including using online communication tools correctly.</p> <ul style="list-style-type: none"> - Understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise acceptable/unacceptable or inappropriate content, contact, conduct or behaviour and know how to report concerns. - The characteristics of positive and healthy friendships (in all contexts, including online) including: trust, respect, honesty, kindness, generosity, boundaries, privacy, consent and the management of conflict, reconciliation and ending relationships. This includes different (non-sexual) types of relationship. - Their rights, responsibilities and opportunities online, including that the same expectations of behaviour apply in all contexts, including online. 	<p>Year 9 Online Safety Baseline test Multiple –Choice Online Tests Read Vocabulary</p> <p>Websites: Office 365 https://unsplash.com/ https://www.canva.com/en_gb/ https://www.google.co.uk/intl/en-GB/drive/</p> <p>Websites: www.bbc.co.uk/bitesize/guides/z36nb9q/revision/2 www.nibusinessinfo.co.uk/content/benefits-computer-networks https://beinternetawesome.withgoogle.com/en_uk www.speedtest.net www.youtube.com/watch?v=Dxcc6ycZ73M www.submarinecablemap.com www.youtube.com/watch?v=ewrBaIT_eBM lifehacks.io/facts-about-the-internet www.youtube.com/watch?v=ZTM9GA-4nBA seotribunal.com/blog/google-stats-and-facts https://www.bbc.co.uk/bitesize/topics/z67ncdm</p>

- Create, reuse, revise and repurpose digital artefacts
- The benefits of strong passwords
- The concept of the digital footprint
- The positive and negative impact of social media
- The relationship between the internet and social media

A basic understanding of the relevant legislation

- About online risks, including any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online.
- That in school and in wider society they can expect to be treated with respect by others, and that in turn they should show due respect to others, including people in positions of authority and due tolerance of other people's beliefs.
- About different types of bullying (including cyberbullying), the impact of bullying, responsibilities of bystanders to report bullying and how and where to get help.
- That some types of behaviour within relationships are criminal, including violent behaviour and coercive control. How information and data is generated, collected, shared and used online.
- The similarities and differences between the online world and the physical world, including: the impact of unhealthy or obsessive comparison with others online (including through setting unrealistic expectations for body image), how people may curate a specific image of their life online, over-reliance on online relationships including social media, the risks related to online gambling including the accumulation of debt, how advertising and information is targeted at them and how to be a discerning consumer of information online.

Network manager/IT Technician

www.lifewire.com/most-common-tlds-internet-domain-extensions-817511
www.yougetsignal.com/tools/network-location/

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[ICT Extra help booklet](#)

**Computer History
Storytelling using
online media**

**Theme:
Back to the Future**

Students to gain understanding of how Animations in film television and computer games advertising have been revolutionised by 3D computer-based modelling and animation. The internet is awash with male US Computer Scientists. This unit has an emphasis of highlighting UK talent and more importantly the contribution of women for Computer Science.

- The relationship between the internet and social media
- Problem-Solving and Critical Thinking.
- Evaluate possible solutions, and think critically to find the most effective way to achieve their goals within the augmented environment.
- Collaboration and Communication
- Collaborate on tasks, solve problems together, and communicate their ideas within the augmented environment.
- Digital Literacy and Technological Proficiency
- Understand interfaces, interact with virtual elements using gestures

Students to gain understanding of how Animations in film television and computer games advertising have been revolutionised by 3D computer-based modelling and animation. Students will gain opportunity to look at modelling and animation with a range of different tools and techniques. They will begin with using Canva presentations followed by using the XR+ online software. Autumn 1 finish designs in Canva.

- 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.
- The legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal.
- About online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online.
- Not to provide material to others that they would not want shared further and not to share personal material which is sent to them.

Students need to appreciate what they are creating and ensure if they are advertising a product then it needs to be correct in thinking about the morals and ethics of what they are doing as well providing them with skills for future employment.

Websites:

- <https://xr.plus/>
- https://www.canva.com/en_gb/
- <https://www.youtube.com/watch?v=HCI3-NJR1kQ>
- <https://www.youtube.com/watch?v=BnbkR9w2c-U>

Knowledge Organiser
[Back to the future](#)

		<p>or voice commands, and navigate through the augmented environment.</p> <ul style="list-style-type: none"> - Content Engagement and Retention. 		
<p>Autumn 2</p>	<p>Computer History Animations using AR</p> <p>Theme: Back to the Future</p>	<p>Students to gain understanding of how Animations in film television and computer games advertising have been revolutionised by 3D computer-based modelling and animation. The internet is awash with male US Computer Scientists. This unit has an emphasis of highlighting UK talent and more importantly the contribution of women for Computer Science.</p> <ul style="list-style-type: none"> - Digital Literacy and Technological Proficiency - Spatial Awareness and Visualisation: - This technology helps develop spatial awareness and visualisation skills as users need to understand how virtual objects relate to the physical environment - Explore and interact with virtual models, animations, or simulations, which helps them grasp complex concepts more effectively and retain knowledge for longer periods. 	<p>Students to gain understanding of how Animations in film television and computer games advertising have been revolutionised by 3D computer-based modelling and animation. Students will gain opportunity to look at modelling and animation with a range of different tools and techniques. They will begin with using Canva presentations followed by using the XR+ online software. Autumn 2 finish designs in XR+.</p> <ul style="list-style-type: none"> - 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. - The legal rights and responsibilities regarding equality (particularly with reference to the protected characteristics as defined in the Equality Act 2010) and that everyone is unique and equal. - About online risks, including that any material someone provides to another has the potential to be shared online and the difficulty of removing potentially compromising material placed online. 	<p>Students need to appreciate what they are creating and ensure if they are advertising a product then it needs to be correct in thinking about the morals and ethics of what they are doing as well providing them with skills for future employment.</p> <p>Websites: https://xr.plus/ https://www.canva.com/en_gb/ https://www.youtube.com/watch?v=HCI3-NJR1kQ https://www.youtube.com/watch?v=BnbkR9w2c-U</p>

		<ul style="list-style-type: none"> - Adaptability and Flexibility - Be flexible in their approach to using augmented reality and be open to exploring different possibilities and ways of interacting with virtual objects. - Empathy and Cultural Understanding: - Explore different places, historical events, or cultural artifacts, fostering empathy and cultural understanding. This helps develop a global mindset and promotes intercultural competence. 	<ul style="list-style-type: none"> - Not to provide material to others that they would not want shared further and not to share personal material which is sent to them. 	
<p>Spring 1</p>	<p>Project Planning tools</p> <p>Theme: Organising work</p>	<p>In this unit students will build confidence and knowledge of learning to plan their work in advance.</p> <p>Planning and designing solutions</p> <ul style="list-style-type: none"> - User requirements - Purpose - Target audience - Content - functionality - navigation system - outputs from the system. - the use of story boards, visualisation diagrams and wireframes as design tools for 	<p>Students will learn to use standard project planning tools which will help them to prepare to independently plan for their OCR coursework when they are in Year 10 according to the assessment requirements</p> <ul style="list-style-type: none"> - Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical system - Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. - Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical system 	<p>Multiple –Choice Online Tests</p> <p>Read Vocabulary</p> <p>AI</p> <p>Mindmaps, Flow diagrams and Flowcharts</p> <p>Wireframes</p> <p>Structure of write-up</p> <p>Websites:</p> <ul style="list-style-type: none"> -Customer needs (blog.hubspot.com) Flow Charts for Practical Tasks (www.cimt.org.uk)

		<p>representing the solution.</p> <ul style="list-style-type: none"> - Location (GPS) based/markerless - Superimposition - Layers/user interaction 	<ul style="list-style-type: none"> - Create a flowchart and a mind map to represent processes within a solution. - Create a flowchart, a visualisation diagram and a wireframe to represent processes within a solution. <p>Programmer Software Engineer</p>	<p>Centre for Innovation in Mathematics Teaching Mind map templates (creately.com) Story board templates (creately.com) YouTube Cambridge Nationals I.T.: Visualisation Diagrams YouTube Wireframe templates creately.com</p>
<p>Spring 2</p>	<p>Spreadsheets</p> <p>Theme: Dino Data Theme Park</p>	<p>This unit is to help students prepare for the RO60 Human Interface Unit for OCR. Students will be revisiting their Spreadsheets skill by modelling a Dinosaur theme park. The unit has a blank spreadsheet where the students will need to follow the instructions to learn about the most popular formulas. The difference between the tasks for this unit compared to Year 7 and Year 8 is the students are required to learn to use complex formulas.</p> <ul style="list-style-type: none"> - 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. - explore the manipulation of data using simple formulas 	<p>Students need to be able to understand what it takes to go from designer to project manager to develop & create their own mobile app. They will familiarise themselves with online environment and the opportunity to build on spreadsheet concepts to develop their own project. Linking in decomposition of a project into small steps, pair programming approach to develop the app and finish by evaluating the success of it.</p> <ul style="list-style-type: none"> - 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. - the characteristics of positive and healthy friendships (in all contexts, including online) including: trust, respect, honesty, kindness, generosity, boundaries, privacy, consent 	<p>Complete the Dino Data package 1500 word finished written report Read Vocabulary</p> <p>Websites: https://code.org/educate/applab https://www.bbc.co.uk/bitesize/topics/z7d634j https://www.bbc.co.uk/bitesize/topics/z7tp34j</p> <p>Knowledge Organiser Spreadsheets</p>

- make use of operators (+, -, *, /) and parenthesis

Creating the spreadsheet solution introduce the use of cell formatting.

- meaningful worksheet names in a workbook
- named cells/group of cells
- cell references (relative, absolute, named, multi-sheet referencing).
- use built in functions SUM, MIN, MAX, AVERAGE, COUNT, IF, COUNTIF, LOOKUP, VLOOKUP, HLOOKUP, AND, OR, DATE, TODAY, SUMIF, SUBTOTAL.
- use relational operators including =, <, >, <=, >=, <>
- solve formula errors (#DIV/0, #NAME?, #REF! etc).

use:

- sorting
- filters.

use:

- range check
- text length
- lookup techniques
- limited choice
 - o drop down lists
 - o radio buttons
- tick list.

Data Manager, Accountants, Banking, Statistician, Market Makers (Stock Brokers)

Theme:
Data manipulation
using spreadsheets

In this unit students will combine Spring 1 Project Planning with Spring 2 Practice Spreadsheet to begin the latest controlled assessment. The term expects students to look at why you need plan a spreadsheet solution and the consequences of not planning the spreadsheet solution effectively.

Planning and designing solutions

- User requirements
- Purpose
- Target audience
- Content
- functionality
- navigation system
- outputs from the system.
- the use of story boards, visualisation diagrams and wireframes as design tools for representing the solution.
- Location (GPS) based/markerless
- Superimposition
- Layers/user interaction

Students need to be able to understand what needs to be planned:

- functionality
- navigation system
- outputs from the system.

- Identify why it is necessary to design a spreadsheet solution.
- Identify the importance of incorporating client requirements into a spreadsheet solution.
- Identify the importance of understanding client requirements.
- Understand the importance of considering the outputs that need to be created.
- Create a flowchart and a mind map to represent processes within a solution.
- Create a flowchart, a visualisation diagram and a wireframe to represent processes within a solution.

Programmer
 Software Engineer
 Web designer

The RO60 mandatory controlled assessment is refreshed every June. The new release is planned to coincide with the students starting the project with the view of completing the coursework by December to meet the January submission.

Read
 Vocabulary

Websites:

[Customer needs](https://blog.hubspot.com)
 (blog.hubspot.com)

[Flow Charts for Practical Tasks](http://www.cimt.org.uk)
 (www.cimt.org.uk)

Centre for Innovation in Mathematics Teaching

[Mind map templates](https://creately.com)
 (creately.com)

[Story board templates](https://creately.com)
 (creately.com)

[YouTube Cambridge Nationals I.T.: Visualisation Diagrams](#)

YouTube

[Wireframe templates](#)
 creately.com

Knowledge Organiser

[Example of a RO60 project theme](#)