

# **Toynbee Curriculum**

## **KS3 Topic Summaries**

# **COMPUTER SCIENCE**

**Toynbee School**



## Scheme of Learning: Year 7 Computing

### Topic Sequence:

1	2	3	4	5	6
Collaborating online respectfully	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

### Topic Overview:

This unit has been designed to ensure that learners are given sufficient time to familiarise themselves with the school network. It also allows the teacher to discuss appropriate use of the school network, and to update and remind learners of important online safety issues. Whilst completing this unit, learners will also learn how to use presentation software effectively. In terms of online safety, this unit focuses on respecting others online, spotting strangers, and the effects of cyberbullying.

Links  
Year 7- Using Media, GCSE - Computing Ethical and Legal Issues

### Lesson Sequence:

**Lesson 1: Welcome to the computing lab** - It is important that year 7 know how to log on, create a secure password, and follow the rules that keep them safe. This lesson has been designed to give teachers time to ensure that learners can do this. The lesson is intentionally low on content as it is the first computing lesson.

**Lesson 2: Welcome to your workstation** - This lesson gives time to introduce the school network to the learners. They will have a tour of the common applications and their personal work areas. They will also learn how to send a respectful email to their peers and teachers. This lesson introduces learners to communicating respectfully online. As with the last lesson, this lesson is intentionally low on content.

**Lesson 3: Respectful online communication** - Learners need to be able to work successfully when collaborating online. Last lesson focused on email communication, but there are lots of other ways to communicate with others online. This lesson digs deeper into online communication and shows learners how to make positive contributions to their online community.

**Lesson 4: Presenting to an audience: part 1** - This lesson focuses on the skills required to plan an effective presentation for an audience. It also explores the term 'cyberbullying' and the effects of cyberbullying.

**Lesson 5: Presenting to an audience: part 2** - This lesson is a continuation of the previous lesson. Learners are reminded of good practice for presentations through a 'true or false' activity. They then continue to work on their presentations, in preparation for showing them to the class.

**Lesson 6: Who are you talking to?** - This lesson introduces learners to the concept of people impersonating others online. This can be done in different contexts, but this lesson focuses on people pretending to be one of our 'non-digital world' friends.

### National curriculum links

Create, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usability  
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

### Education for a Connected World links

#### Online relationships

I can explain what it means to 'know someone' online and why this might be different from knowing someone offline (11-14)

I can explain how sharing something online may have an impact either positively or negatively (11-14)

#### Online bullying

I can recognise online bullying can be different to bullying in the physical world and can describe some of those difference (11-14)

I can identify a range of ways to report concerns and access support both in school and at home about online bullying. (11-14)

#### Privacy and security

I can explain what a strong password is and demonstrate how to create one. (11-14)

I can explain that internet use is never fully private and is monitored, e.g. adult supervision. (11-14)

### Sequence of Lessons:

1	Welcome to the Computing Lab
2	Welcome to your Workstation
3	Respectful Online Communication
4	Presenting to an Audience
5	Presenting to an Audience
6	Who are you talking to?

### Topic Resources:

<b>Knowledge Map:</b>	7.1: Messaging in Digital Media	<b>Any other Resources:</b>	
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### Assessment:

<b>Knowledge:</b>	21 question multiple choice questions
<b>Application of Knowledge:</b>	Presentation Assessment via Rubric

### Supportive Reading:

<b>BBC BiteSzie</b>	<a href="#">How to deal with cyber-bullying - BBC Bitesize</a>
<b>NSPCC</b>	<a href="#">Positively online: top tips for online wellbeing   NSPCC</a>



**Topic Sequence:**

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

**Topic Overview:**

Imagine a world without computer networks, and how different your life would be. There would be no more YouTube, Google, instant messaging, online video gaming, Netflix, and iTunes. There would be no online shopping, or quickly looking up directions to a location at the click of a button. There would be no more sharing of files or peripherals such as a printer, and no more central backups of information. As networks have evolved, society has become increasingly reliant on the services that they provide. They have changed the way we learn, work, play, and communicate. This unit begins by defining a network and addressing the benefits of networking, before covering how data is transmitted across networks using protocols. The types of hardware required are explained, as is wired and wireless data transmission. Learners will develop an understanding of the terms 'internet' and 'World Wide Web', and of the key services and protocols used. Practical exercises are included throughout to help strengthen understanding.

Links

Year 8 – Developing the Webs

GCSE: - Edexcel Topic 4 Networks

**Lesson Sequence:**

**Lesson 1: Computer networks and protocols:** This lesson will get the learners thinking about the history of different communication methods. Learners will learn what a computer network is, along with the meaning of the word 'protocol'. Learners will gain an appreciation of the growth of networked devices.

**Lesson 2: Networking hardware:** This lesson explores the functionality of key hardware components found in a network. The lesson covers network cables, hubs, servers and routers. Each is explained in turn, and learners then use their knowledge of each component to build a series of increasingly complicated network diagrams.

**Lesson 3: Wired and wireless networks:** This lesson explores the different wireless technologies, and how bandwidth varies between these technologies. Learners will discuss the mobile technologies of 3G, 4G, and 5G. Learners will develop an understanding of the term 'bandwidth' and develop an appreciation for online activities that are bandwidth-heavy, before moving on to explore the advantages and disadvantages of wired and wireless networks.

**Lesson 4: The internet** This lesson explores the internet and its uses. Learners will gain an appreciation of the vastness of the internet. It is truly global, with 99% of data transmitted through oceanic cables spanning all continents, the longest of which is 39,000 kilometres. Learners will develop an understanding of packet structure and packet switching. The term 'protocol' will be revisited, and two particular protocols, TCP and IP, will be explained.

**Lesson 5: Internet services:** This lesson explores the internet, its services, and the World Wide Web. Learners will understand the difference between the internet and the World Wide Web and how each came about. They will understand that the activity on the internet in a single minute is quite staggering. The term 'Internet of Things (IoT)' will be explored. Learners will discuss the advantages of IoT, as well as the disadvantages, focussing on privacy and security.

**Lesson 6: The World Wide Web:** This lesson explores the World Wide Web (WWW), the components that are associated with the WWW, and how they work together. The key components of the WWW are explained (browser, server, web pages, and search engines). A link is made to the first lesson of the unit, in which the class learnt about protocols. Learners will identify which websites should use HTTP and which should use HTTPS based on the type of activity that they support.

**National curriculum links**

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

**Education for a connected world links**

Explain the term 'connectivity' as the capacity for connected devices ('internet of things') to collect and share information about me with or without my knowledge (including microphones, cameras and geolocation).

Describe how internet-connected devices can affect me.

<b>Sequence of Lessons:</b>		<b>Topic Resources:</b>	
<b>1</b>	Computer networks and protocols	<b>Knowledge Map:</b>	7.2 - Networks
<b>2</b>	Networking hardware	<b>Any other Resources:</b>	
<b>3</b>	Wired and wireless networks	<b>Assessment:</b>	
<b>4</b>	The internet	<b>Knowledge:</b>	24 Multiple Choice questions
<b>5</b>	Internet services	<b>Application of Knowledge:</b>	Mastery Book
<b>6</b>	The World Wide Web	<b>Supportive Reading:</b>	
		<b>Introduction to networks</b>	What is a network? - Introduction to networks - KS3 Computer Science Revision - BBC Bitesize
		<b>KS3 Computing Complete Revision &amp; Practice - CGP</b>	Chapter 2 Available from: KS3 Computing Complete Revision & Practice   CGP Books



## Scheme of Learning: Year 7 Computing

### Topic Sequence:

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

### Topic Overview:

This unit is the first programming unit of KS3. The aim of this unit and the following unit ('programming 2') is to build learners' confidence and knowledge of the key programming constructs. Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit.

The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration. All of the examples and activities for this unit use Scratch 3.

#### Links

Year 7 – Programming essentials part 2, Year 8 – Mobile App, Year 9 - Python Programming, GCSE – Edexcel Topic 6 Programming

### Lesson Sequence:

**Lesson 1: Introduction to programming and sequencing:** Learners will be introduced to the unit and will take part in an activity to help them understand the precise nature of instructions that computers need to execute. Learners will be taught the song *Frère Jacques* before working in pairs to place blocks of code into the appropriate subroutines so that their program will play the song correctly.

**Lesson 2: Sequence and variables:** In this lesson the learners will be introduced to variables as well as the opportunity to get more confident with sequences. Learners will be given a Scratch program where they will work in pairs to predict, run, investigate, and modify.

**Lesson 3: Selection:** The focus of this lesson is to introduce learners to the concept of selection statements and how they can be used to control the flow of a program. The lesson starts with activities that allow the learners to understand expressions that evaluate to 'true' or 'false'. This will be followed by a PRIMM activity using another version of the 'Chat with Big Ed' program from the last lesson, this time using selection (if statements).

**Lesson 4: Operators:** This lesson will build on the previous lesson by introducing the use of logical and comparison operators to use in selection statements. The learners will start by following Scratch code and working out what the program will output given different inputs. They will be introduced to logical and comparison operators before taking part in an activity where they are given a playing card and have to decode if it evaluates to 'true' or 'false' using various different expressions.

**Lesson 5: Count-controlled iteration:** In this lesson learners will be introduced to the concept of iteration, the examples will be specifically focused on count-controlled iteration. The learners will be given an inefficient program and be asked to spot patterns and repetition. They will be taken through a live coding demonstration of taking their inefficient program and adding iteration to make it more efficient.

**Lesson 6: Problem-solving:** This is the final lesson of the first unit of programming in Year 7. The main activity for the lesson will be learners' main summative assessment task where they are required to independently work through tasks to complete a dance move game.

#### National curriculum links

- 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 (e.g. lists, tables, or arrays); design and develop modular programs that use procedures or functions
- Understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- Understand simple Boolean logic (e.g. and, or, and not)
- Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Sequence of Lessons:		Topic Resources:	
		<b>Knowledge Map:</b>	7.3: Programming 1
		<b>Any other Resources:</b>	Scratch
		<b>Assessment:</b>	
<b>1</b>	Introduction to Sequencing	<b>Knowledge:</b>	2 homework activities (in Lesson 2 (4) and Lesson 5 (6)) that ask a set of multiple-choice questions.
<b>2</b>	Sequence and Variables	<b>Application of Knowledge:</b>	Learners to complete a set of tasks using a Scratch program
<b>3</b>	Selection	<b>Supportive Reading:</b>	
<b>4</b>	Operators	<b>BBC Bite Size</b>	<a href="#">Programming - KS3 Computer Science - BBC Bitesize</a>
<b>5</b>	Count Controlled Iteration	<b>KS3 Computing Complete Revision &amp; Practice - 2020</b>	Chapter 6 Available from: KS3 Computing Complete Revision & Practice - 2020
<b>6</b>	Problem Solving		

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Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

### Topic Overview:

The spreadsheet unit for Year 7 takes learners from having very little knowledge of spreadsheets to being able to confidently model data with a spreadsheet. The unit uses engaging activities to progress learners from using basic formulas to writing their own COUNTIF statements. This unit will give learners a good set of skills that they can use in computing lessons and in other subject areas.

### Lesson Sequence:

**Lesson 1: Getting to know a spreadsheet:** This lesson introduces learners to the concept of spreadsheets and why spreadsheets are useful. They will learn how to navigate a spreadsheet via its rows and columns, and become familiar with the cell referencing system. They will locate and select ranges of cells and change cells' background colour and border properties.

**Lesson 2: Quick calculations:** In this lesson, learners will practise entering text into cells of a spreadsheet and then learn how to perform calculations on the data using basic formulas and cell references. They will learn how to use the autofill tool to duplicate cells and continue a linear pattern, and then combine the autofill tool with basic formulas to quickly populate a results column with calculations.

**Lesson 3: Collecting data:** This lesson begins with a recap of the previous lesson's content and some further practise of using formulas. Then learners will discover the difference between data and information, and between primary and secondary sources of data. They will then design a survey to collect some data of their own for use in the next lessons.

**Lesson 4: Become a data master!:** In this lesson, learners will discover how to use functions to analyse data in a spreadsheet. As well as learning how to automatically create charts from data, they will be introduced to four functions: SUM, MAX, MIN, and COUNTA. Functions allow you to very quickly calculate results. The functions covered in this lesson are used to calculate totals, find the maximum and minimum values in a range, and count populated (i.e. non-blank) cells.

**Lesson 5: Level up your data skills!:** This lesson will introduce learners to three more functions — COUNTIF, AVERAGE, and IF — and to how they can sort and filter a spreadsheet. Learners will work on a larger data set to get a feel for analysing real-world data using spreadsheets.

**Lesson 6: Assessment:** In this lesson, learners will discover how to use conditional formatting, whereby the appearance of a cell changes automatically depending on the data it contains, according to rules the learners themselves set. They then complete an end-of-unit summative assessment.

### National curriculum links

- 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 multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users

### Sequence of Lessons:

1	Getting to know a spreadsheet
2	Quick calculations
3	Collecting data
4	Become a data master!
5	Level up your data skills!
6	Assessment

### Topic Resources:

Knowledge Map:	7.4 - Spreadsheets	Any other Resources:	Excel
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### Assessment:

Knowledge:	Set out the number of knowledge questions for this topic
Application of Knowledge:	A description of how the pupil will be expected to apply the knowledge here – see example summary for reference

### Supportive Reading:

BBC Bite Size	<a href="#">How spreadsheets work - Spreadsheets - KS3 ICT Revision - BBC Bitesize</a>
KS3 Computing Complete Revision & Practice - CGP	Chapter 3 Available from: KS3 Computing Complete Revision & Practice   CGP Books



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## Topic Sequence:

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

## Topic Overview:

This unit begins right where 'Programming I' left off. Learners will build on their understanding of the control structures' sequence, selection, and iteration (the big three), and develop their problem-solving skills. Learners will learn how to create their own subroutines, develop their understanding of decomposition, learn how to create and use lists, and build upon their problem-solving skills by working through a larger project at the end of the unit.

### Links

Year 7 – Programming essentials part 1, Year 8 – Mobile App, Year 9 - Python Programming, GCSE – Edexcel Topic 6 Programming

## Lesson Sequence:

**Lesson 7: You've got the moves!** - This lesson is designed to formalise the use of subroutines, a technique that has been introduced gently over the previous unit. Learners will create a dance battle game by decomposing dance moves and creating subroutines for each move.

**Lesson 8: Fly cat fly!** - Learners are introduced to the concept of condition-controlled loops by using the PRIMM approach with a Scratch game called 'Fly cat, fly!'. They will predict, run, investigate, and modify code in order to build confidence with using condition-controlled loops.

**Lesson 9: Loop the loop!** - Learners should have a grasp of each type of iteration available to them in Scratch. This lesson focuses on when each type of iteration should be used. It will give learners the evaluative skills to implement iteration in their own programs as they start to develop them.

**Lesson 10: Treasure those lists!** - Learners are introduced to lists during this lesson. There is initially an educator-led demonstration on a simple shopping list application created in Scratch. Learners then dig deeper into lists by navigating through a treasure hunt game. The object of the game is to collect and swap the right items in order to reach the next level. Learners should use their investigation skills to discover the essential tools that Scratch can offer surrounding lists.

**Lessons 11 & 12: Translate this!** - Learners are given a scenario to create a translation quiz for a Modern Foreign Languages teacher. The learners will decompose the problem and start to build a Scratch program to meet the requirements. This is a pair programming project that takes place over two lessons; pairs will develop their programs to differing levels. A rubric is to be used for peer- or self-assessment to check progress.

Extension activities allow learners to explore more challenging aspects of the solution. In Lesson 12, learners will be given a multiple choice quiz as a formal final assessment.

### National curriculum links

- To use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; to make appropriate use of data structures (for example, lists, tables, or arrays); to design and develop modular programs that use procedures or functions
- To understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- To understand simple Boolean logic (for example, AND, OR, and NOT)
- To create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

Sequence of Lessons:		Topic Resources:			
		<b>Knowledge Map:</b>	7.5 – Programming 2	<b>Any other Resources:</b>	Scratch
		<b>Assessment:</b>			
		<b>Knowledge:</b>	20 mark multiple choice questions		
		<b>Application of Knowledge:</b>	Paired Programming Scenario		
		<b>Supportive Reading:</b>			
		<b>BBC Bite Size</b>	<a href="#">Programming - KS3 Computer Science - BBC Bitesize</a>		
		<b>KS3 Computing Complete Revision &amp; Practice - ocr</b>	Chapter 6 Available from: KS3 Computing Complete Revision & Practice 1, OCR Books		
<b>1</b>	You've got the moves!				
<b>2</b>	Fly cat fly!				
<b>3</b>	Loop the loop!				
<b>4</b>	Treasure those lists!				
<b>5</b>	Translate this! (Part 1)				
<b>6</b>	Translate this! (Part 2)				



## Scheme of Learning: Year 7 Computing

### Topic Sequence:

1	2	3	4	5	6
Messaging in digital media	Networks from semaphores to the Internet	Programming essentials in Scratch – part I	Modelling data using spreadsheets	Programming essentials in Scratch – part II	Using media – Gaining support for a cause

### Topic Overview:

During this unit, learners 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. Learners will develop software formatting skills and explore concerns surrounding the use of other people's work, including licensing and legal issues.

#### Links:

Year 8 – Heroes of computing; Computing GCSE Topic 5 – Ethical and Legal Issues

### Lesson Sequence:

**Lesson 1: Features of a word processor** - Learners will start with an activity to help them understand that each software application has a different purpose: they will play a game of 'Guess Who', in which they will have to pick the most appropriate software.

Next, learners will use word processing software to explore a range of formatting tools, and then they will be given a document to format using these tools..

**Lesson 2: Licensing appropriate images** - In this lesson, learners will build on the document that they formatted last lesson and will add appropriate images to it, applying relevant formatting techniques. Learners will look at a selection of images and discuss which image they think would be appropriate for the given scenarios. Learners will be introduced to copyright law and Creative Commons licensing.

**Lesson 3: The credibility of sources-** The purpose of this lesson is for learners to understand that not all information found on the internet is reliable or trustworthy. Learners will look at techniques to use to help determine the credibility of a source, and then apply these skills by writing an article that could be real or fake. Learners will then look at each other's work and try to determine whether or not the article is credible.

**Lesson 4: Research and plan your blog** - learners will be given the opportunity to research their cause and document their findings. Building on the concepts covered in the previous two lessons, the learners will be introduced to the concept of plagiarism. Learners will spend time looking at blog posts to evaluate their layout and content, then they will research their own cause and justify the credibility of their sources.

**Lesson 5: Promoting your cause** - Learners will be introduced to the software that they will use to make their blog on Microsoft Sway. Learners will use their research document from the previous lesson to create their blog. Learners will spend time giving feedback on each other's work.

**Lesson 6: Project completion and assessment** - Learners will review their work based on the success criteria, and will have a chance to make final changes to their work based on the peer feedback that they received in the previous lesson. Learners will finish the unit by completing an end-of-unit assessment.

#### National curriculum links

- 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, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

#### Education for a Connected World links

- Managing online information
- I can use a range of features to quality assure the content I access online. (11–14)
- I can explain how to use search effectively and use examples from my own practice to illustrate this. (11–14)
- Copyright and ownership
- I know that commercial online content can be viewed, accessed, or downloaded illegally. (11–14)
- I can accurately define the concept of plagiarism. (11–14)
- I can use this definition to evaluate my own use of online sources. (11–14)
- I understand the concept of software and content licensing. (11–14)
- I understand Creative Commons Licensing protocols. (11–14)
- I can identify the potential consequences of illegal access or downloading and how it may impact me and my immediate peers. (11–14)

### Sequence of Lessons:

1	Features of a word processor
2	Licensing appropriate images
3	The credibility of sources-
4	Research and plan your blog
5	Promoting your cause
6	Project completion and assessment

### Topic Resources:

<b>Knowledge Map:</b>	7.6 – Using Media	<b>Any other Resources:</b>	MS sway
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### Assessment:

<b>Knowledge:</b>	16 Multiple Choice questions
<b>Application of Knowledge:</b>	Learners develop a blog on MS Sway to support a cause of their choice. This is assessed with a simple rubric.

### Supportive Reading:

<b>BBC Bite Size</b>	<a href="#">KS3 Copyright and intellectual property</a>
<b>KS3 Computing Complete Revision &amp; Practice - CCP</b>	Chapter 3 Available from: KS3 Computing Complete Revision & Practice   CGP Books



# Scheme of Learning: Year 8 Computing

## Topic Sequence:

1	2	3	4	5	6
Computer Systems	Representation	Developing for the Web	Intro to Python	Heroes of Computing	Mobile App

## Topic Overview:

This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs, to the fundamental binary building blocks that these components consist of.

The aim is to provide a concise overview of how computing systems operate, conveying the essentials and abstracting away the technical details that might confuse or put off learners.

The last lessons cover two interesting contemporary topics: artificial intelligence and open source software. These are linked back to the content of the unit, helping learners to both broaden their knowledge and focus on the topics addressed in the unit.

Links  
Year 8 – Representation GCSE Computing- Unit 3 Computers

## Lesson Sequence:

**Lesson 1: Get in gear** - To develop an understanding of this unique characteristic, learners will compare calculating machines from the past to modern general-purpose computers. After that, they will connect the important but perhaps abstract idea of a program to the applications that they use every day. Finally, they will execute a program themselves, playing noughts and crosses with a human opponent.

**Lesson 2: Under the hood** - Learners will discover how all computing systems, regardless of form or capabilities, make use of the same components: a processor, memory, storage, input and output devices, and communication components. They will form a simple, concise picture of what each of these 'universal' components does, and how they work together to execute programs.

**Lesson 3: Orchestra conductor** - The abstract descriptions of how the processor, memory, storage, and communication components interact with each other and function as a system will now be embedded in concrete, familiar scenarios that the learners will investigate. Through the activities in this lesson, learners will look under the surface and gain a further glimpse into what goes on under the hood when they use computing devices.

**Lesson 4: It's only logical** - Through practice, learners can master the use of logical expressions in software, but it is a different story altogether to uncover the connection between logic and computing hardware. This is the deeper goal of the lesson: to bridge the gap between logic and circuits and make the direct link between them explicit.

**Lesson 5: Thinking machines** - In this lesson, learners will attempt to define the term 'artificial intelligence' and explore the kinds of problems that it has traditionally dealt with. They will also focus on machine learning and investigate its relationship with conventional programming. Learners will move on to use Google Teachable Machine, to gain an insight into what training a model involves, and the ethical considerations that are tied into building any system that makes decisions.

**Lesson 6: Sharing** - In this final lesson, learners will take a quiz that will assess their understanding of the computing systems concepts that they have encountered throughout the unit.

## National curriculum links

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- understand simple Boolean logic (for example, AND, OR and NOT) and some of its uses in circuits and programming
- 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

## Sequence of Lessons:

1	Lesson 1: Get in gear
2	Lesson 2: Under the hood
3	Lesson 3: Orchestra conductor
4	Lesson 4: It's only logical
5	Lesson 5: Thinking machines
6	Lesson 6: Sharing

## Topic Resources:

Knowledge Map:	8.1 Computer Systems	Any other Resources:	
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## Assessment:

Knowledge:	16 Multiple choice questions
Application of Knowledge:	Homework and Lesson activities

## Supportive Reading:

Hardware and Software	<a href="#">Hardware and software - KS3 Computer Science - BBC Bitesize</a>
KS3 Computing Complete Revision & Practice - CGP	Chapter 1 Available from: KS3 Computing Complete Revision & Practice   CGP Books



## Scheme of Learning: Year 8 Computing

### Topic Sequence:

1	2	3	4	5	6
Computer Systems	Representation	Developing for the Web	Intro to Python	Heroes of Computing	Mobile App

### Topic Overview:

This unit conveys essential knowledge relating to binary representations. The activities gradually introduce learners to binary digits and how they can be used to represent text and numbers. The concepts are linked to practical applications and problems that the learners are familiar with.

#### Links

Year 8 Computer Systems, GCSE Computing Unit 2 Data

### Lesson Sequence:

**Lesson 1: Across time and space** - Learners discuss familiar examples of representations, some of which date back millennia, to better understand their use and characteristics. This prepares learners for their encounter with binary representations in the context of computing, and places these within a much broader (and more familiar) context.

**Lesson 2: Lights and drums** - Learners work in groups through an activity that requires them to encode, transmit, and decode short messages, with each group using a different coding scheme and communication medium (signals, light, sounds, holes on paper, etc.). The activity reinforces the learners' understanding of text representation using sequences of symbols, while emphasis is placed on distinguishing between symbols and the way in which they are embodied in physical media.

**Lesson 3: Binary digits** - Learners grasp what binary digits are by associating them with familiar sets of symbols such as letters and decimal digits. Learners solve simple problems that reinforce the connection between (alphanumeric) information and its binary representation. They also consider the question of why binary digits are predominantly used in conjunction with computing systems.

**Lesson 4: Numbers in binary** - Learners build upon their familiarity with using a decimal numbering system, in order to draw analogies with how numbers can be represented using binary. They use activities, either unplugged or software-based, to become familiar with binary number representation and convert between binary and decimal.

**Lesson 5: Large quantities** - This lesson familiarises learners with bytes and the prefixes used for measuring representation size, such as 'kilo-', 'mega-', 'giga-' and 'tera-'. Simple activities embed these concepts in real-life settings and introduce learners to conversions between the different units and multiples.

**Lesson 6: Turing's mug** - The unit is concluded with a summative assessment quiz and a puzzle activity that challenges learners to unchain Alan Turing's mug.

#### National curriculum links

- Understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits

### Sequence of Lessons:

1	Across time and space
2	Lights and drums
3	Binary digits
4	Numbers in binary
5	Large quantities
6	Turing's mug

### Topic Resources:

<b>Knowledge Map:</b>	8.2 Representation	<b>Any other Resources:</b>	
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### Assessment:

<b>Knowledge:</b>	20 Multiple Choice Questions and 3 Fill in the words Questions.
<b>Application of Knowledge:</b>	Problem Solving activity in Turing's mug

### Supportive Reading:

<b>Binary</b>	Binary   Interactive   Computing (advanced-ict.info))
<b>Data Representation</b>	<a href="#">Data representation - KS3 Computer Science - BBC Bitesize</a>
<b>KS3 Computing Complete Revision &amp; Practice</b>	Chapter 1 Available from: KS3 Computing Complete Revision & Practice   CGP Books

## Scheme of Learning: Year 8 Computing

### Topic Sequence:

1	2	3	4	5	6
Computer Systems	Representation	Developing for the Web	Intro to Python	Heroes of Computing	Mobile App

### Topic Overview:

In this unit, learners will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML, and CSS, learners will investigate how websites are catalogued and organised for effective retrieval using search engines. By the end of the unit, learners will have a functioning website.

Links:

Year 7: Networks, Year 8: Mobile App, GCSE Computing Unit 4 - Networks

### Lesson Sequence:

**Lesson 1: Website building blocks** - Learners will begin by considering the power of automation for repetitive tasks, before delving into some practical web page formatting activities using HTML tags. Firstly, they will practise formatting sections of text to improve readability. Learners will then modify tags to change their appearance in a document, to make them different from the defaults provided.

**Lesson 2: Words are not enough** - Learners will begin by recapping the important fundamentals of web page design, specifically the use of tags and their modification. They will explore the structure and operation of the img tag and understand how they can be used to 'add' images to web pages. To consolidate the learning of the first two lessons, they will also try to replicate a given web page design to see if they can use what they have learnt in the most effective way.

**Lesson 3: Taking shortcuts** - Learners will begin by recapping how formatting is controlled using inline HTML formatting. They will appreciate that this approach is time consuming and allows inconsistencies in design to manifest. Learners will start to experiment with using CSS to format tags in a HTML document. They will then progress on to applying their own formatting schemes to work they have already created.

**Lesson 4: Searching the web** - In this lesson, learners will consider how web pages are found and catalogued, ready for people to search for them. By considering how search engines find and rank web pages, they will learn how they can make their designs appear towards the top of search engine lists, so that more people will view what they have created.

**Lesson 5: Tightening the web** - In this lesson learners will investigate advanced search techniques. They will understand how search operators can be used to combine or exclude search terms to either expand or narrow search results. They will practice using these terms for specific purposes and then build on the work from the last lesson to create a new page that can be used to summarise their learning from this lesson.

**Lesson 6: Navigating the web** - In this lesson learners will begin by creating a web page to summarise their learning over the entire unit by creating an additional 'How to' web page, they will follow this up by adding navigation to all pages of the website.

National curriculum links

- Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability.

Sequence of Lessons:	
1	Website building blocks
2	Words are not enough
3	Taking shortcuts
4	Searching the web
5	Tightening the web
6	Navigating the web

Topic Resources:			
Knowledge Map:	8.3 Websites	Any other Resources:	
Assessment:			
Knowledge:	10 Multiple Choice Questions		
Application of Knowledge:	Learners make a website summarising their learning over the unit		
Supportive Reading:			
YouTube HTML Tutorial	<a href="#">KS3 Web design tutorial HTML Lesson 1 - YouTube</a>		
BBC Bitesize	<a href="#">Using HTML to create websites - Internet and communication - KS3 Computer Science Revision - BBC Bitesize</a>		
KS3 Computing Complete Revision & Practice - CGP	Chapter 2 Available from: KS3 Computing Complete Revision & Practice   CGP Books		



# Scheme of Learning: Year 8 Computing

## Topic Sequence:

1	2	3	4	5	6
Computer Systems	Representation	Developing for the Web	Intro to Python	Heroes of Computing	Mobile App

## Topic Overview:

This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution.

A range of pedagogical tools is employed throughout the unit, with the most prominent being pair programming, live coding, and worked examples.

### Links:

Year 7 Scratch Programming 1 and 2, Year 8 Mobile App Development, GCSE Computing Unit1 Computer Thinking and Unit 6 Programming

## Lesson Sequence:

**Lesson 1: First steps** - In this introductory lesson, learners will write and execute their first programs in Python. They will go through the basics of displaying messages, assigning values to variables, and receiving input from the keyboard.

**Lesson 2: Crunching numbers** - In the previous lesson, learners were introduced to displaying messages, assigning values to variables, and receiving input from the keyboard. This lesson will help them gain a deeper understanding of assignments, and explicitly address some of the common misconceptions around the semantics of assignment statements.

**Lesson 3: At a crossroads** - This lesson introduces selection and randomness. These are two features that will allow learners to develop programs with a very diverse range of behaviours. Learners will revisit some of the programs that they have encountered in previous lessons and extend them into more versatile programs that use selection.

**Lesson 4: More branches** - This lesson progresses to multi-branch selection, then introduces while, the general-purpose iterative structure available in Python. Learners will explore problems that will allow them to deepen their comprehension of when and how selection should be used. For example, they will build programs that check the weather conditions where they are living and display appropriate responses. They will also be introduced to iteration, making sure that they understand the mechanics of how it works, before they go on to build their own iterative programs in the next lesson.

**Lesson 5: Round and round** - In the first part of this lesson, learners will be introduced to counting. Counters are important, as they are the simplest example of variables that are used to compute results iteratively, with each new value accumulated over the previous ones. In the second part of the lesson, learners will apply the skills and knowledge that they have developed to create a times tables practice game. It is an example that naturally combines iteration and selection, while also being useful

**Lesson 6: Putting it all together** - In this final lesson of the unit, learners will apply and consolidate what they've learnt by extending the number guessing game that they developed previously into an iterative version that allows them multiple guesses.

### National curriculum links

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
  - use two or more programming languages, at least one of which is textual, to solve a variety of computational problems
- understand several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- understand how instructions are stored and executed within a computer system
- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems

## Sequence of Lessons:

1	First steps
2	Crunching numbers
3	At a crossroads
4	More branches
5	Round and round
6	Putting it all together

## Topic Resources:

<b>Knowledge Map:</b>	8.4 Python Programming	<b>Any other Resources:</b>	Thonny (python)
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## Assessment:

<b>Knowledge:</b>	25 Multiple Choice Questions
<b>Application of Knowledge:</b>	Learners make a number guessing game

## Supportive Reading:

<b>Python Basics</b>	Key Stage 3 Python   The Basics   CSNewbs
<b>KS3 Computing Complete Revision &amp; Practice - CGP</b>	Chapter 6 & 7 Available from: KS3 Computing Complete Revision & Practice   CGP Books

**Scheme of Learning: Year 8 Computing****Topic Sequence:**

1	2	3	4	5	6
<b>Computer Systems</b>	<b>Representation</b>	<b>Developing for the Web</b>	<b>Intro to Python</b>	<b>Heroes of Computing</b>	<b>Mobile App</b>

**Topic Overview:**

In this unit learners research key historical people who have made a significant contribution to computing and how we interact computing devices. Lessons 1 to 3 are designed to challenge the gender/ethnic/LGBTQ divide in computing and celebrate the achievements of women, ethnic minority and LGBTQ individuals in computing. Learners will develop and present their findings on their given 'hero'. It will also give the learners an opportunity to work collaborative online and revisit the researching and presentation skills from previous units in Year 7 and 8.

Lessons 4 to 6 allow the learners to think about the future of technology and how the computing landscape might change in the near and distant future. Learners are working in groups and are tasked with producing a sales pitch and advert for a future technology. This allows learner to be creative and explore the trending patterns in computing use.

Links:

GCSE – Edexcel Topic 5 Issues and Impacts, iMedia – R094 – Visual identity and digital graphics.

**Lesson Sequence:**

**Lesson 1:** Learners review the definition of a computer are introduced to the Analytical Engine designed by Charles Babbage. The Learners are then presented with topic of heroes and are assigned groups of 2/3. Each group is then assigned a hero and are tasked to complete a 5 min presentation on that person.

**Lesson 2:** Learners review what makes a good presentation, and the parameters are set for the presentations. This is done at the start of lesson 2 to enable the learners to think about the content of their presentations and what they need to edit. All presentations must be completed before the start of next lesson.

**Lesson 3:** The Learners present their presentations and are reviewed via peer review and marked via a rubric.

**Lesson 4:** The Learners investigate the possibilities of future technology. They watch a video about future technology that is likely to be 'mainstream' in the next 20 years. Learners are then tasked with developing an advert and pitch their ideas.

**Lesson 5:** Learners continue to develop their adverts and pitches

**Lesson 6:** Learners pitch their concepts and present their adverts to the class. Pitches are peer reviewed. Presentation skills are assessed via a rubric.

**National curriculum links**

Undertake creative projects that involve selecting, using, and combining multiple applications,

Create, re-use, revise and re-purpose digital artefacts for a given audience

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

**Education for a connected world links**

Analyse and evaluate the reliability and validity of online information

**Sequence of Lessons:**

<b>1</b>	Lesson 1: Introduction to the topic
<b>2</b>	Lesson 2: Presentation Development
<b>3</b>	Lesson 3: Presentation of Heroes
<b>4</b>	Lesson 4: Introduction to the future
<b>5</b>	Lesson 5: Development of pitches
<b>6</b>	Lesson 6: Presentation of Future Tech pitches

**Topic Resources:**

<b>Knowledge Map:</b>	8.5: Heroes of Computing	<b>Any other Resources:</b>	
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**Assessment:**

<b>Knowledge:</b>	
<b>Application of Knowledge:</b>	Presentation of Computing Hero and Pitch for new Technology

**Supportive Reading:**

<b>The History of the Computer</b>	The History of the Computer : Igotofsky, Rachel: Amazon.co.uk: Books
<b>Technology through time</b>	Background - Technology through time - KS3 ICT Revision - BBC Bitesize
<b>Explorer Academy Future Tech: The Science Behind the Story</b>	Explorer Academy Future Tech: The Science Behind the Story: Amazon.co.uk: National Geographic Kids, Kiffel-Alceh, Jamie: 9781426339141: Books



# Scheme of Learning: Year 8 Computing

## Topic Sequence:

1	2	3	4	5	6
Computer Systems	Representation	Developing for the Web	Intro to Python	Heroes of Computing	Mobile App

## Topic Overview:

In a world where there's an app for every possible need, this unit aims to take the learners from designer to project manager to developer in order to create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Learners will work in pairs to consider the needs of the user; decompose the project into smaller, more manageable parts; use the pair programming approach to develop their app together; and finish off by evaluating the success of the project against the needs of the user.

### Links

Year 7 Scratch Programming 1 and 2, Year 8 Python Programming, GCSE Computing Unit 1 – Computational Thinking and Unit 6 Programming

## Lesson Sequence:

**Lesson 1: App for That!** - In a world where there's an app for every possible need, this unit aims to take the learners from designer to project manager to developer to create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project.

**Lesson 2: Tappy Tap App** - Learners will be introduced to the concept of event-driven programming and applying the paradigm to the app they started to develop last week. They will be shown the coding environment and the first steps will be taken using live coding, in which the learners will write their code alongside the teacher.

**Lesson 3: School Lab Studios** - Learners will be presented with an app that has three errors. They will have to open the app to attempt to spot and fix the errors. Next, the learners will work on the score screen of the Tappy Tap App, to make it display the user's score at the end of the game.

**Lesson 4: User input** - learners will start by thinking about how user input is captured and processed, before being given the challenge of adding code to a prebuilt app to deal with user input. Learners will then decompose the app project that they started last lesson into more manageable steps.

**Lesson 5: App development** - The main focus of this lesson is to spend most of the time developing the learners' app projects further. The learners will start by recapping their work and what they planned in the previous lesson. They will then spend time building their apps using pair programming. Towards the end of the lesson, the learners will ask classmates to review their apps in order to get feedback that they can respond to in the next lesson.

**Lesson 6: Project completion** - This is the final lesson of the unit and the focus will be on completing and evaluating the learners' app projects. The lesson starts with an activity to remind the learners about problem-solving and debugging, followed by a short activity to help them plan the time that they have left in the lesson to complete their app.

### National curriculum links

- Design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems
- 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 several key algorithms that reflect computational thinking; use logical reasoning to compare the utility of alternative algorithms for the same problem
- Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

## Sequence of Lessons:

1	Lesson 1: App for That!
2	Lesson 2: Tappy Tap App
3	Lesson 3: School Lab Studios
4	Lesson 4: User input
5	Lesson 5: App development
6	Lesson 6: Project completion

## Topic Resources:

<b>Knowledge Map:</b>	8.6 Mobile App Development	<b>Any other Resources:</b>	App Lab
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## Assessment:

<b>Knowledge:</b>	10 Multiple Choice questions
<b>Application of Knowledge:</b>	Learners design and develop a mobile app

## Supportive Reading:

<b>App Lab @ Code.org</b>	<a href="https://code.org">App Lab   Code.org</a>
<b>App Lab Tutorial</b>	<a href="https://code.org/tutorials/app-lab">Code.org Tic Tac Toe - Build Your First Game in App Lab Even If You Have Never Coded Before - YouTube</a>
<b>KS3 Computing Complete Revision &amp; Practice - OCR</b>	Chapter 6 & 7 Available from: KS3 Computing Complete Revision & Practice   CGP



# Scheme of Learning: Year 9 Computing

## Topic Sequence:

1	2
Cyber Security	Animations

## Topic Overview:

This unit takes learners on a journey of discovery of techniques that cybercriminals use to steal data, disrupt systems, and infiltrate networks. The learners will start by considering the value their data holds and what organisations might use it for. They will then learn about social engineering and other common cybercrimes, and finally look at methods to protect against these attacks.

Links  
Year 7: Networks, GCSE computing Unit 4 Networks

## Lesson Sequence:

**Lesson 1: You and your data** - Learners are introduced to the unit to help them understand the value of data to companies. The focus will be on what data companies collect from their users and how they use it. They will be introduced briefly to the law regarding data protection and will reflect on why cybercriminals might want to gain access to data.

**Lesson 2: Social engineering** - The aim of this lesson is for learners to become aware of how humans can be a weak point in the system, as well as looking at the social engineering tactics deployed by cybercriminals to dupe users into giving away data that could lead to further crime. Learners will be taken through the common social engineering techniques, completing exercises through the lesson to encourage them to think more deeply about the consequences of the scams and how to avoid becoming a victim.

**Lesson 3: Script kiddies** - Learners explore the concept of hacking and the techniques used by hackers to exploit computer systems. They look at terms such as brute force attacks, hacktivists, script kiddies, and DDoS attacks. The lesson will conclude with the learners exploring the Computer Misuse Act and the consequences of hacking.

**Lesson 4: Rise of the bots** - The purpose of this lesson is to make learners aware of malware and the different categories of malware, as well as understanding how they work and the potential damage they can do. They will then be introduced to the key terms before being instructed to do a research task to create a fact-based quick read on one type of malware they have learnt about. Learners will be introduced to web bots and what task they perform on the internet. They will then be shown how bots are used in conjunction with malware and will be given a scenario that allows them to understand the hidden role of bots and what potential influence they could have on societal issues.

**Lesson 5: There's no place like 127.0.0.1** - The aim of this lesson is for learners to develop their understanding of the risks that cyberthreats pose to a network, followed by an exploration of some of the more common methods of defending a network against attacks, such as firewalls and anti-malware. The learners will look at the more common threats that exist globally before thinking of the threats at the level of a school network.

**Lesson 6: Under Attack** - the learners are encouraged to reflect on the learning that has taken place throughout the unit before taking an end-of-unit assessment. The learners will be prompted to reflect through a game called Under Attack. Learners will work in groups to plan their defence strategy on a tight budget before cyberattacks start to happen

## National curriculum links

- 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

## Education for a Connected World links

- I can explain how contributors to social media may be 'social bots'
- I can explain what malware is and give some examples of how it operates and what its impact could be on a device or user (e.g. viruses, trojans, ransomware)
- I can explain how to manage security software (e.g. anti-virus, security patches, adware blockers) on my devices and understand why regular updates are important
- I can explain how and assess when more secure use may require more advanced password management (e.g. dual-factor authentication, regular rolling, security questions, CAPTCHA, biometrics)

## Sequence of Lessons:

Sequence of Lessons:		Topic Resources:	
		Knowledge Map:	Any other Resources:
1	Lesson 1: You and your data	9.1 Cyber Security	
		Assessment:	
2	Lesson 2: Social engineering	Knowledge:	15 Multiple Choice questions
3	Lesson 3: Script kiddies	Application of Knowledge:	Classwork and Strategy in the game
		Supportive Reading:	
5	Lesson 5: There's no place like 127.0.0.1	BBC Bitesize	<a href="#">Malware and security - eSafety - KS3 ICT Revision - BBC Bitesize</a>
6	Lesson 6: Under Attack	KS3 Computing Complete Revision & Revision 2020	Chapter 2 Available from: KS3 Computing Complete Revision 2020



## Topic Sequence:

1	2
<b>Cyber Security</b>	<b>Animations</b>

## Topic Overview:

In this unit learners will discover how professionals create 3D animations using the industry-standard software package, Blender. By completing this unit learners will gain a greater understanding of how this important creative field is used to make the media products that we consume. Sessions will take learners through the basics of modelling, texturing, and animating; outputs will include 3D models and short videos.

## Links:

Creative iMedia – Creating a Visual Identity

## Lesson Sequence:

**Lesson 1: Move, rotate, scale, colour** - Learners will look at the impact of 3D animation on the wider world, linking to their own experiences. Learners will be introduced to the basics of making models in Blender: deleting and adding objects; moving, rotating, scaling, and colouring. Links should be made between the naming and reuse of colours, and the computer programming concept of variables.

**Lesson 2: Animation, names, parenting** - This lesson covers the basics of keyframe animation, the technique behind how 3D digital animations are made. Learners will be able to explain the differences between keyframing and stop motion animation, and give reasons for why keyframing might be preferable in computer animation.

**Lesson 3: Complex models and colours** - This lesson covers more complex modelling techniques that can be used to build realistic-looking models. Starting from primitive objects, such as cubes and cylinders, learners will use edit mode and the extrude, loop cut, and face editing commands to make a rocket and a chair.

**Lesson 4: Organic modelling** - This fourth lesson covers modelling techniques that are used to make organic/natural-looking models. To do this, learners will first see the importance of breaking symmetry in their models to mimic the real world. The lesson then covers several modelling tools that allow for more natural-looking images, including proportional editing, the knife tool, and subdivision.

**Lesson 5: Lights, camera, render** - This fifth lesson teaches learners how to set up a film shot for rendering. This includes adding extra lighting, adjusting the camera, picking a render mode, and changing the render settings. Learners will understand the range of lights available in Blender, how to set up a camera for a shot, and the benefits and drawbacks of using ray tracing in their films.

**Lesson 6: Project** - This sixth and final lesson brings together all the skills that learners have covered so far. Learners will create a 3–10 second video based on the plan they made for homework after the last lesson. They will self-assess against a set of skills, and ask a peer to assess their work when it is completed.

## National curriculum links

- Create, reuse, revise, and repurpose digital artefacts for a given audience, with attention to trustworthiness, design, and usability

## Sequence of Lessons:

<b>1</b>	Lesson 1: Move, rotate, scale, colour
<b>2</b>	Lesson 2: Animation, names, parenting
<b>3</b>	Lesson 3: Complex models and colours
<b>4</b>	Lesson 4: Organic modelling
<b>5</b>	Lesson 5: Lights, camera, render
<b>6</b>	Lesson 6: Project

## Topic Resources:

<b>Knowledge Map:</b>	9.2 Animations	<b>Any other Resources:</b>	Blender
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## Assessment:

<b>Knowledge:</b>	None
<b>Application of Knowledge:</b>	Students are assessed via a rubric on their final project

## Supportive Reading:

<b>Blender For Dummies</b>	Blender For Dummies: Amazon.co.uk: van Gumster, Jason: 9781119616962: Books
<b>Blender Tutorials</b>	<a href="https://www.blender.org/tutorials/">Tutorials — blender.org</a>