

# Houghton Conquest Computing

Key skills and knowledge



EYFS	Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Data Handling
	◆ <a href="#">Using a computer</a>	◆ <a href="#">All about instructions</a>	<a href="#">Exploring Hardware</a>	◆ <a href="#">Programming Bee-Bots</a>	◆ <a href="#">Introduction to data</a>
Learning how to operate a camera to take photographs of meaningful creations or moments.			✓		
Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary.			✓	✓	
Recognising and identifying familiar letters and numbers on a keyboard.	✓				
Developing basic mouse skills such as moving and clicking.	✓				
Using logical reasoning to understand simple instructions and predict the outcome.		✓		✓	
Following instructions as part of practical activities and games.		✓		✓	
Learning to give simple instructions.		✓		✓	
Experimenting with programming a Bee-bot/ Blue-bot and learning how to give simple commands.				✓	
Learning to debug instructions, with the help of an adult, when things go wrong.		✓		✓	

Computer science

EYFS		Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Data Handling
		✦ <a href="#">Using a computer</a>	✦ <a href="#">All about instructions</a>	<a href="#">Exploring Hardware</a>	✦ <a href="#">Programming Bee-Bots</a>	✦ <a href="#">Introduction to data</a>
Using a simple online paint tool to create digital art.	Information Technology	✓				
Representing data through sorting and categorising objects in unplugged scenarios.						✓
Representing data through pictograms.						✓
Exploring branch databases through physical games.						✓
Recognising that a range of technology is used in places such as homes and schools.	Digital Literacy			✓		
Learning to log in and log out.		✓				

# EYFS

## Key knowledge from the unit

Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Data Handling
<p>◆ <a href="#">Using a computer</a></p>	<p>◆ <a href="#">All about instructions</a></p>	<p><a href="#">Exploring Hardware</a></p>	<p>◆ <a href="#">Programming Bee-Bots</a></p>	<p>◆ <a href="#">Introduction to data</a></p>
<p>To be able to understand what a computer keyboard is and recognise some letters and numbers.</p>	<p>To know that being able to follow and give simple instructions is important in computing.</p>	<p>To know that different types of technology can be found at home and in school.</p>	<p>To know that you can program a Bee-Bot with some simple commands.</p>	<p>To know that sorting objects into various categories can help you locate information.</p>
<p>To know that a mouse can be used to click, drag and create simple drawings.</p>	<p>To understand that it is important for instructions to be in the right order.</p>	<p>To know that you can take simple photographs with a camera or iPad.</p>	<p>To understand that debugging means how to fix some simple programming errors.</p>	<p>To know that using yes/no questions to find an answer is known as a branching database.</p>
<p>To know that to use a computer you need to log in to it and then log out at the end of your session.</p>	<p>To understand why a set of instructions may have gone wrong.</p>	<p>To know that you must hold the camera still and ensure the subject is in the shot to take a photo.</p>	<p>To understand that an algorithm is a set of clear and precise instructions.</p>	<p>To know that a pictogram is a way of showing information.</p>

Year 1	Computing systems and networks	Programming 1	Skills showcase	Programming 2	Creating media	Data handling	<u>Online Safety</u>
	♦ <u>Improving mouse skills</u>	♦ <u>Algorithms unplugged</u>	<u>Rocket to the moon</u>	♦ <u>Bee-Bot (1/2)</u>	<u>Digital imagery (G/MQ)</u>	♦ <u>Introduction to data</u>	
Learning how to explore and tinker with hardware to find out how it works.	✓			✓	✓	✓	
Recognising that some devices are input devices and others are output devices.		✓				✓	
Learning where keys are located on the keyboard.	✓		✓		✓	✓	
Learning how to operate a camera to take photos and videos.			✓	✓	✓		
Learning that decomposition means breaking a problem down into smaller parts.		✓					
Using decomposition to solve unplugged challenges.		✓		✓			
Using logical reasoning to predict the behaviour of simple programs.			✓	✓			
Developing the skills associated with sequencing in unplugged activities.		✓	✓	✓	✓		

Computer Science

# Year 1

**Computing systems and networks**

**Programming 1**

**Skills showcase**

**Programming 2**

**Creating media**

**Data handling**

Online Safety

◆ Improving mouse skills

◆ Algorithms unplugged

Rocket to the moon

◆ Bee-Bot (1/2)

Digital imagery (G/MQ)

◆ Introduction to data

**Computer Science**

**IT**

Following a basic set of instructions.



Assembling instructions into a simple algorithm.



Programming a floor robot to follow a planned route.



Learning to debug instructions when things go wrong.



Using programming language to explain how a floor robot works.



Learning to debug an algorithm in an unplugged scenario.



Using a basic range of tools within graphic editing software.



Taking and editing photographs.



Year 1		Computing systems and networks	Programming 1	Skills showcase	Programming 2	Creating media	Data handling	Online Safety
		♦ Improving mouse skills	♦ Algorithms unplugged	Rocket to the moon	♦ Bee-Bot (1/2)	Digital imagery (G/MQ)	♦ Introduction to data	
Developing control of the mouse through dragging, clicking and resizing of images to create different effects.	Information Technology	✓		✓		✓	✓	
Developing understanding of different software tools.		✓		✓		✓	✓	
Recognising devices that are connected to the internet.		✓		✓			✓	✓
Understanding that we are connected to others when using the internet.								✓
Searching and downloading images from the internet safely.						✓		
Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc.				✓			✓	
Using data representations to answer questions about data.							✓	
Using software to explore and create pictograms and branching databases.							✓	

Year 1	Computing systems and networks	Programming 1	Skills showcase	Programming 2	Creating media	Data handling	<u>Online Safety</u>
Understanding some of the ways we can use the internet.	IT						✓
Recognising common uses of information technology, including beyond school.							✓
Logging in and out and saving work on their own account.	Digital Literacy	✓	✓				
When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable.					✓		✓
Understanding how to interact safely with others online.							✓
Recognising how actions on the internet can affect others.							✓
To be able to recognise what a digital footprint is and how to be careful about what we "post".							✓



# Year 1

## Key knowledge from the unit

Computing systems and networks	Programming 1	Skills showcase	Programming 2	Creating media	Data handling	Online Safety
◆ <a href="#">Improving mouse skills</a>	◆ <a href="#">Algorithms unplugged</a>	<a href="#">Rocket to the moon</a>	◆ <a href="#">Bee-Bot (1/2)</a>	<a href="#">Digital imagery (G/MQ)</a>	◆ <a href="#">Introduction to data</a>	
To know that "log in and log out" means to begin and end a connection with a computer.	To understand that an algorithm is when instructions are put in an exact order.	To know that when we create something on a computer it can be more easily saved and shared than a paper version.	To understand the basic functions of a Bee-Bot.	To understand that holding the camera still and considering angles and light are important to take good pictures.	To know how that charts and pictograms can be created using a computer.	To know that the internet is many devices connected to one another.
To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.	To know that input devices get information into a computer and that output devices get information out of a computer.	To know some of the simple graphic design features of a piece of online software.	To know that you can use a camera/tablet to make simple videos.	To know that you can edit, crop and filter photographs.	To understand that a branching database is a way of classifying a group of objects.	To know what to do if you feel unsafe or worried online - tell a trusted adult.
To know that passwords are important for security.	To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.	To know that a spreadsheet is an electronic 'table' for sorting data.	To know that algorithms move a Bee-Bot accurately to a chosen destination.	To know how to search safely for images online.	To know that computers understand different types of 'input'.	To know that people you do not know on the internet (online) are strangers and are not always who they say they are.
	To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.					To know that to stay safe online it is important to keep personal information safe.
	To know that you can add data to a spreadsheet.					To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.

# Year 2

**Computing systems and networks 1**

**Programming 1**

**Computing systems and networks 2**

**Programming 2**

**Creating media**

**Data handling**

♦ [Online Safety](#)

♦ [What is a computer?](#)

♦ [Algorithms and debugging](#)

Word processing (G/MQ)

[ScratchJr](#)

Stop motion (1/2/3)

♦ [International Space Station](#)

**Computer Science**

Understanding what a computer is and that it's made up of different components.

Recognising that buttons cause effects and that technology follows instructions.

Learning how we know that technology is doing what we want it to do via its output.

Using greater control when taking photos with cameras, tablets or computers.

Developing confidence with the keyboard and the basics of touch typing.

Articulating what decomposition is.

Decomposing a game to predict the algorithms used to create it.

Learning that there are different levels of abstraction.

Explaining what an algorithm is.

✓						
✓				✓		
✓						
✓					✓	
		✓	✓			✓
		✓				
		✓				
		✓				
		✓			✓	

# Year 2

**Computing systems and networks 1**

**Programming 1**

**Computing systems and networks 2**

**Programming 2**

**Creating media**

**Data handling**

♦ [Online Safety](#)

♦ [What is a computer?](#)

♦ [Algorithms and debugging](#)

Word processing (G/MO)

[ScratchJr](#)

Stop motion (1/2/3)

♦ [International Space Station](#)

## Computer Science

Following an algorithm.



Creating a clear and precise algorithm.



Learning that programs execute by following precise instructions.



Incorporating loops within algorithms.



Using logical thinking to explore software, predicting, testing and explaining what it does.



Using an algorithm to write a basic computer program.



Using loop blocks when programming to repeat an instruction more than once.



Year 2	Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Creating media	Data handling	♦ <u>Online Safety</u>
	♦ <u>What is a computer?</u>	♦ <u>Algorithms and debugging</u>	Word processing (G/MQ)	<u>ScratchJr</u>	Stop motion (1/2/3)	♦ <u>International Space Station</u>	
Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.	✓	✓	✓				
Using word processing software to type and reformat text.	✓		✓				
Using software (and unplugged means) to create story animations.				✓	✓		
Creating and labelling images.	✓					✓	
Searching for appropriate images to use in a document.			✓				
Understanding what online information is.			✓				
Collecting and inputting data into a spreadsheet.						✓	
Interpreting data from a spreadsheet.						✓	
Learning how computers are used in the wider world	✓					✓	

Information Technology

Year 2	Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Creating media	Data handling	◆ <u>Online Safety</u>
	◆ <u>What is a computer?</u>	◆ <u>Algorithms and debugging</u>	Word processing (G/MQ)	<u>ScratchJr</u>	Stop motion (1/2/3)	◆ <u>International Space Station</u>	
Identifying whether information is safe or unsafe to be shared online.			✓				✓
Learning how to create a strong password.							✓
Learning to be respectful of others when sharing online and ask for their permission before sharing content.							✓
Learning strategies for checking if something they read online is true.							✓
Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable.							✓

**Digital Literacy**

# Year 2

## Key knowledge from the unit

Computing systems and networks 1	Programming 1	Computing systems and networks 2	Programming 2	Creating media	Data handling	◆ <a href="#">Online Safety</a>
◆ <a href="#">What is a computer?</a>	◆ <a href="#">Algorithms and debugging</a>	Word processing (G/MQ)	<a href="#">ScratchJr</a>	Stop motion (1/2/3)	◆ <a href="#">International Space Station</a>	
To know the difference between a desktop and laptop computer.	To understand what machine learning is and how it enables computers to make predictions.	To know that touch typing is the fastest way to type.	To know that coding is writing in a special language so that the computer understands what to do.	To understand that an animation is made up of a sequence of photographs.	To understand that you can enter simple data into a spreadsheet.	To understand the difference between online and offline.
To know that people control technology.	To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.	To know that I can make text a different style, size and colour.	To understand that the character in ScratchJr is controlled by the programming blocks.	To know that small changes in my frames will create a smoother looking animation.	To understand what steps you need to take to create an algorithm.	To understand what information I should not post online.
To know some input devices that give a computer an instruction about what to do (output).	To know that abstraction is the removing of unnecessary detail to help solve a problem.	To know that "copy and paste" is a quick way of duplicating text.	To know that you can write a program to create a musical instrument or tell a joke.	To understand what software creates simple animations and some of its features e.g. onion skinning.	To know what data to use to answer certain questions.	To know what the techniques are for creating a strong password.
To know that computers often work together.					To know that computers can be used to monitor supplies.	To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'
						To understand that not everything I see or read online is true.

# Year 3

**Computing systems and networks 1**

**Programming**

**Computing systems and networks 2**

**Computing systems and networks 3**

**Creating media**

**Data handling**

[Online Safety](#)

◆ [Networks and the internet](#)

◆ [Scratch](#)

Emailing (G/MO)

◆ [Journey inside a computer](#)

◆ Video trailers (1/2)

Comparisons cards databases (G/MO)

**Computer Science**

Understanding what the different components of a computer do and how they work together.



Learning about the purpose of routers.



Drawing comparisons across different types of computers.



Understanding the role of the key components of a network.



Understanding that websites & videos are files that are shared from one computer to another.



Learning about the role of packets.



Understanding how networks work and their purpose.



Identifying the key components within a network, including whether they are wired or wireless.



Recognising links between networks and the internet.



# Year 3

**Computing systems and networks 1**

**Programming**

**Computing systems and networks 2**

**Computing systems and networks 3**

**Creating media**

**Data handling**

[Online Safety](#)

◆ [Networks and the internet](#)

◆ [Scratch](#)

Emailing (G/MO)

◆ [Journey inside a computer](#)

◆ Video trailers (1/2)

Comparisons cards databases (G/MO)

**Computer Science**

Learning how data is transferred.



Using decomposition to explain the parts of a laptop computer.



Using decomposition to explore the code behind an animation.



Using repetition in programs.



Using logical reasoning to explain how simple algorithms work.



Explaining the purpose of an algorithm.



Forming algorithms independently.



Using logical thinking to explore more complex software; predicting, testing and explaining what it does.



Incorporating loops to make code more efficient.



Continuing existing code.



Making reasonable suggestions for how to debug their own and others' code.





# Year 3

**Computing systems and networks 1**

**Programming**

**Computing systems and networks 2**

**Computing systems and networks 3**

**Creating media**

**Data handling**

Online Safety

◆ Networks and the internet

◆ Scratch

Emailing (G/MO)

◆ Journey inside a computer

◆ Video trailers (1/2)

Comparisons cards databases (G/MO)

## Information Technology

Taking photographs and recording video to tell a story.



Using software to edit and enhance their video adding music, sounds and text on screen with transitions.



Learning to log in and out of an email account.



Writing an email including a subject, 'to' and 'from'.



Sending an email with an attachment.



Replying to an email.



Understanding the vocabulary associated with databases: field, record, data.



Learning about the pros and cons of digital versus paper databases.



Sorting and filtering databases to easily retrieve information.



# Year 3

		computing systems and networks 1	Programming	Computing systems and networks 2	Computing systems and networks 3	Creating media	Data handling	<u>Online Safety</u>
		♦ <u>Networks and the internet</u>	♦ <u>Scratch</u>	Emailing (G/MO)	♦ <u>Journey inside a computer</u>	♦ Video trailers (1/2)	Comparisons cards databases (G/MO)	
Creating and interpreting charts and graphs to understand data.	IT						✓	
Recognising how social media platforms are used to interact.								✓
Understanding the purpose of emails.				✓				
Recognising that different information is shared online including facts, beliefs and opinions.	Digital Literacy							✓
Learning how to identify reliable information when searching online.								✓
Learning how to stay safe on social media.								✓
Considering the impact technology can have on mood.								✓
Learning about cyberbullying.				✓				
Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.				✓				

# Year 3

## Key knowledge from the unit

	Computing systems and networks 1	Programming	Computing systems and networks 2	Computing systems and networks 3	Creating media	Data handling	Online Safety
	◆ <a href="#">Networks and the internet</a>	◆ <a href="#">Scratch</a>	<a href="#">Emailing (G/MO)</a>	◆ <a href="#">Journey inside a computer</a>	◆ <a href="#">Video trailers (1/2)</a>	<a href="#">Comparisons cards databases (G/MO)</a>	
	To understand what a network is and how a school network might be organised.	To know that Scratch is a programming language and some of its basic functions.	To understand that email stands for 'electronic mail.'	To know the roles that inputs and outputs play on computers.	To know that different types of camera shots can make my photos or videos look more effective.	To know that a database is a collection of data stored in a logical, structured and orderly manner.	To know that not everything on the internet is true: people share facts, beliefs and opinions online.
	To know that a server is central to a network and responds to requests made.	To understand how to use loops to improve programming.	To know that an attachment is an extra file added to an email.	To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.	To know that I can edit photos and videos using film editing software.	To know that computer databases can be useful for sorting and filtering data.	To understand that the internet can affect your moods and feelings.
	To know how the internet uses networks to share files.	To understand how decomposition is used in programming.	To understand that emails should contain appropriate and respectful content.	To know what a tablet is and how it is different from a laptop/desktop computer.	To understand that I can add transitions and text to my video.	To know that different visual representations of data can be made on a computer.	To know that privacy settings limit who can access your important personal information Information, such as your name, age, gender etc.
	To know that a router connects us to the internet.	To understand that you can remix and adapt existing code.	To know that cyberbullying is bullying using electronics such as a computer or phone.				To know what social media is and that age restrictions apply.
	To know what a packet is and why it is important for website data transfer.						

# Year 4

**Computing systems and networks**

**Programming 1**

**Creating media**

**Skills showcase**

**Programming 2**

**Data handling**

Online Safety

◆ Collaborative learning

◆ Further coding with Scratch

Website design (G/MO)

◆ HTML

◆ Computational thinking

Investigating weather (G/MO)

Using chroma key (green screen) technology to change a background.

Understanding that weather stations use sensors to gather and record data

which predicts the weather.

Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.

Using decomposition to solve a problem by finding out what code was used.

Using decomposition to understand the purpose of a script of code.

Identifying patterns through unplugged activities.

**Computer Science**



# Year 4

**Computing systems and networks**

**Programming 1**

**Creating media**

**Skills showcase**

**Programming 2**

**Data handling**

**Online Safety**

◆ Collaborative learning

◆ Further coding with Scratch

Website design (G/MO)

◆ HTML

◆ Computational thinking

Investigating weather (G/MO)

**Computer Science**

Using past experiences to help solve new problems.



Using abstraction to identify the important parts when completing both plugged and unplugged activities.



Creating algorithms for a specific purpose.



Coding a simple game.



Using abstraction and pattern recognition to modify code.



Incorporating variables to make code more efficient.



Remixing existing code.



Year 4	Computing systems and networks	Programming 1	Creating media	Skills showcase	Programming 2	Data handling	<u>Online Safety</u>
	♦ <u>Collaborative learning</u>	♦ <u>Further coding with Scratch</u>	Website design (G/MO)	♦ <u>HTML</u>	♦ <u>Computational thinking</u>	Investigating weather (G/MO)	
Building a web page and creating content for it.			✓	✓			
Designing and creating a webpage for a given purpose.			✓				
Use online software for documents, presentations, forms and spreadsheets.	✓						
Using software to work collaboratively with others.	✓		✓				
Understanding why some results come before others when searching.							✓
Using keywords to effectively search for information on the internet.						✓	
Understanding that information found by searching the internet is not all grounded in fact.				✓			✓
Searching the internet for data.						✓	
Designing a device which gathers and records sensor data.						✓	

Information Technology

Year 4	Computing systems and networks	Programming 1	Creating media	Skills showcase	Programming 2	Data handling	<u>Online Safety</u>
		◆ <u>Collaborative learning</u>	◆ <u>Further coding with Scratch</u>	Website design (G/MO)	◆ <u>HTML</u>	◆ <u>Computational thinking</u>	
Recording data in a spreadsheet independently.	Information Technology					✓	
Sorting data in a spreadsheet to compare using the 'sort by...' option.						✓	
Understanding that data is used to forecast weather.						✓	
Understanding that software can be used collaboratively online to work as a team.		✓					
Learning to make judgements about the accuracy of online searches.	Digital Literacy						✓
Identifying forms of advertising online.							✓
Recognising what appropriate behaviour is when collaborating with others online.		✓					
Reflecting on the positives and negatives of time online.							✓
Identifying respectful and disrespectful online behaviour.							✓
Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others.				✓			✓

# Year 4

Computing systems and networks	Programming 1	Creating media	Skills showcase	Programming 2	Data handling	<u>Online Safety</u>
◆ <u>Collaborative learning</u>	◆ <u>Further coding with Scratch</u>	Website design (G/MO)	◆ <u>HTML</u>	◆ <u>Computational thinking</u>	Investigating weather (G/MO)	
To understand that software can be used collaboratively online to work as a team.	To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch.	To know that a website is a collection of pages that are all connected.	To understand and identify examples of HTML tags.	To know that combining computational thinking skills can help you to solve a problem.	To know that computers can use different forms of input to sense the world around them so that they can record and respond to data ('sensor data').	To understand some of the methods used to encourage people to buy things online.
To know what type of comments and suggestions on a collaborative document can be helpful.	To know what a conditional statement is in programming.	To know that websites usually have a homepage and subpages as well as clickable links to new pages, called hyperlinks.	To understand what changing the HTML and CSS does to alter the appearance of an object on the web .	To understand that pattern recognition means identifying patterns to help them work out how the code works.	To know that a weather machine is an automated machine that respond to sensor data.	To understand that technology can be designed to act like or impersonate living things.
To know that you can use images, text, transitions and animation in presentation slides.	To understand that variables can help you to create a quiz on Scratch.	To know that websites should be informative and interactive.	To understand that copyright means that those images are protected and to understand that we should do a "creative commons" image search if we wish to use images from the internet.	To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.	To understand that 'green screen technology' is a green background in front of which moving subjects are filmed so a separately filmed background can be added to the final image.	To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.
			To know what "fake news" is and ways to spot websites that carry this type of misinformation.			To understand what behaviours are appropriate in order to stay safe and be respectful online.
			To know what the "inspect" elements tool is and ways of using it to explore and alter text and images.			

## Key knowledge from the unit



