

## Computing Non-Negotiable Key Skills, Knowledge and Vocabulary

### National Curriculum

**Key stage 2 Pupils should be taught to:** ☑ design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts ☑ use sequence, selection, and repetition in programs; work with variables and various forms of input and output ☑ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs ☑ understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration ☑ use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content ☑ select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information ☑ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

### Key Concepts

**Online Safety – Children know how to use technology safely and know the importance of personal information.**

**Coding programming – Children understand algorithms and how to detect and correct errors in order to de-bug.**

**Multimedia and processing – Children can recognise, develop and edit a range of media including text, image and video.**

**Communication and collaboration – Children understand that the internet can be used to communicate in a variety of different ways.**

Key Vocabulary	Key Skills	Subject Knowledge	Key Vocabulary
----------------	------------	-------------------	----------------

## Online Safety

### THINK YOU KNOW HECTORS WORLD

1. To use technology safely, respectfully and responsibly
2. To recognise acceptable/unacceptable behaviour
3. To identify a range of ways to report concerns about content and contact.
4. To understand that the Internet contains fact, fiction and opinions and begin to distinguish between them
5. To understand what personal information should be kept private.
6. To know that passwords keep information secure and that they should be kept private

**To know what makes a safe password.**

**Methods for keeping passwords safe.**

**To understand how the Internet can be used in effective communication.**

**To understand how a blog can be used to communicate with a wider audience.**

**To consider the truth of the content of websites.**

**To learn about the meaning of age restrictions symbols on digital media and devices.**

### Online Safety.

Understanding what personal information is.

Explains about Trusted Adults

Terms and conditions are asked for

Dangers or data being shared.

Children understand what makes a good password for use on the Internet. Children are beginning to realise the outcomes of not keeping passwords safe.

Children understand that some information held on websites may not be accurate or true.

- Children are beginning to understand how to search the Internet and how to think critically about the results that are returned

Children can identify some physical and emotional effects of playing/watching inappropriate content/games

Password – A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as a website.

Internet – A global computer network providing a variety of information and communication facilities, consisting of interconnected networks and computers.

Blog – A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.

Concept map – A diagram that shows how different objects or ideas are related and connected.

Username – An identification used by a person with access to a computer, network, or online service.

Website – A set of related web pages located under a single name.

Webpage – A page online that makes up one screen of a website.

Spoof website – A website that uses dishonest designs to trick users into thinking that it represents the truth.

PEGI rating – A rating that shows what age a game is suitable for.

	<h2>Coding/ programming</h2> <ol style="list-style-type: none"> <li>1. To design, write and debug programs</li> <li>2. To use sequence, selection, and repetition in programs</li> <li>3. To know how to detect and correct errors in algorithms and programs</li> </ol> <p>To design algorithms using flowcharts. To design an algorithm that represents a physical system and code this representation. To use selection in coding with the 'if' command. To understand and use variables in 2Code. To deepen understanding of the different between timers and repeat commands.</p>	<p>Children can explain what Object, Action, Output, Control and Event are in computer programming.</p> <p>Children can describe what they did to make their vehicle change angle.</p> <ul style="list-style-type: none"> <li>• Children can explain what a variable is in programming.</li> <li>• Children can explain why variables need to be named.</li> </ul> <p>Children are beginning to understand how the use of the timer differs from the repeat command and can experiment with the different methods of repeating blocks of code.</p> <ul style="list-style-type: none"> <li>• Children can explain how they made objects repeat actions.</li> </ul> <p>Children can explain what debug (debugging) means.</p>	<p><b>Action</b> - Types of commands, which are run on an object. They could be used to move an object or change a property.</p> <p><b>Algorithm</b> - a precise step by step set of instructions used to solve a problem or achieve an objective.</p> <p><b>Bug</b> - A problem in a computer program that stops it working the way it was designed.</p> <p><b>Code block</b> - A group of commands that are joined together and are run when a specific condition is met or when an event occurs.</p> <p><b>Code Design</b> – Design what your program will look like and what it will do.</p> <p><b>Command</b> - A single instruction in a computer program.</p> <p><b>Control</b> - These commands determine whether parts of the program will run, how often and sometimes, when.</p>



**Debug/Debugging** - Looking for any problems in the code, fixing and testing them.

**Design Mode** - Used to create the look of a 2Code computer program when it is run.

**Event** – Something that causes a block of code to be run.

**If** - A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run.

**Input** - Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.

**Output** - Information that comes out of the computer e.g. sound.

**Object** - An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects.

**Properties** – All objects have properties that can be changed in design or by writing code e.g. image, colour and scale properties.

**Repeat** - This command can be used to make a block of commands run a set number of times or forever.

**Computer simulation** - A program that models a real-life situation.

**Selection** - This is a conditional/decision command. When selection is used, a program will choose a different outcome depending on a condition.



			<p><b>Timer - Use this command to run a block of commands after a timed delay or at regular intervals.</b></p> <p><b>Variable – A named area in computer memory. A variable has a name and a value. The program can change this variable value.</b></p>
--	--	--	---

## Multimedia and processing

1. To know how to cut, copy and paste between applications
2. To know how to edit, delete, insert and replace text using mouse and arrow keys
3. To recognise the difference and the advantages and disadvantages between electronic media and printed media and select key features when designing publications
4. To know how to download and amend images that they have taken
5. To sequence still images and video and use simple editing techniques

## Spreadsheets.

To use the symbols more than, less than and equal to, to compare values.

To use 2Calculate to collect data and produce a variety of graphs.

To use the advanced mode of 2Calculate to learn about cell references.

To learn how to use the home, top and bottom row keys.

To practice typing with the left and right hand.

I can use two hands to type the letters on the keyboard

I can touch type using my left hand

I can touch type using my right hand

- Children can create a table of data on a spreadsheet.
- Children can use a spreadsheet program to automatically create charts and graphs from data.

Children can use the 'more than', 'less than' and 'equals' tools to compare different numbers and help to work out solutions to calculations.

- Children can use the 'spin' tool to count through times tables.

< > = – Symbols used to represent comparing two values.  $a < b$  means 'a is less than b'.  $a > b$  means 'a is greater than b'.  $a = b$  means 'a is equal to b'. These can be combined, for example  $a \leq b$  means 'a is equal to or less than b'.

Advance mode – A mode of 2Calculate in which the cells have references and can include formulae.

Copy and Paste – A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.

Columns – Vertical reference points for the cells in a spreadsheet.

Cells – An individual section of a spreadsheet grid. It contains data or calculations.

Delete key - Use this key to remove the contents of a cell.

Equals tool – tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Move cell tool – This tool makes a cell's contents moveable by drag-and-drop methods.

Rows - Vertical reference points for the cells in a spreadsheet.

Spin Tool – Clicking on this in a cell will increase or decrease the value in the cell to the right by 1.

Spreadsheet - A computer program that represents information in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the

## Communication and collaboration

1. To understand computer networks including the internet
2. To begin to explore how the internet can provide multiple services

### Email

To think about different methods of communication.  
 To open and respond to an email using an address book.  
 To learn how to use email safely.  
 To add an attachment to an email.  
 To explore a simulated email scenario.  
 Children can use 2Connect to highlight the strengths and weaknesses of each method.  
 Children have written rules about how to stay safe using email.  
 Children have contributed to classmates' rules.  
 Children can attach work to an email.

To introduce typing terminology.  
 To understand the correct way to sit at the keyboard.

- To understand the names of the fingers.
- To understand what is meant by – home, bottom, and top rows.
- Developed ability to touch type the home, bottom, and top rows.

Children can list a range of different ways to communicate.  
 Children know what CC means and how to use it.

value to be inserted based on the values in other cells.

Posture – The correct way to sit at the computer.  
 Top row keys – The keys on the top row of the keyboard.  
 Home row keys – The keys on the middle row of the keyboard.  
 Bottom row keys – The keys on the bottom row of the keyboard.  
 Space bar – The bar at the bottom of the keyboard.

Communication – The sharing or exchanging of information by speaking, writing, or using some other medium such as email.  
 Email – Messages sent by electronic means from one device to one or more people.  
 Compose – To write or create something.  
 Send – To make an email be delivered to the email address it is addressed to.  
 Report to the teacher – A way in 2Email to tell the teacher if you have received an email that makes you feel upset or scared.  
 Attachment – A file, which could be a piece of work or a picture, that is sent with the email.

## Branching Databases

To sort objects using just 'yes' or 'no' questions.  
To complete a branching database using 2Question.  
To create a branching database of the children's choice.

## Simulations

To consider what simulations are.  
To explore a simulation.  
To analyse and evaluate a simulation.  
Children can explore a simulation.

- Children can use a simulation to try out different options and to test predictions.

Children can begin to evaluate simulations by comparing them with real situations and considering their usefulness

- Children can recognise patterns within simulations and make and test predictions.
- Children can identify the relationships and rules on which the simulations are based and test their predictions.

Children can evaluate a simulation to determine its usefulness for purpose

Children understand how a branching database works.

Children understand how YES/NO questions are structured and answered.

Address book – A list of people who you regularly send an email to.

Save to draft – Allows you to save an email that you are working on and send it later.

Password – A secret word, phrase or combination of letters, numbers and symbols that must be used to gain admission to a site or application such as email.

CC – A way of sending a copy of your email to other people so they can see the information in it.

Formatting – Allows you to change the way the text of an email looks. For example, you can make the text bold or underline it.

Branching database – A way to sort information by asking questions that are normally answered 'yes' or 'no'.

Data – Facts and statistics collected together for information.

Database – A collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers.

Question – Something that is asked or written to try and gain information.



## Graphing

To enter data into a graph and answer questions.  
To solve an investigation and present the results in graphic form.

- Children know that a computer simulation can represent real and imaginary situations.
  - Children can give some examples of simulations used for fun and for work.
- Children can give suggestions of advantages and problems of simulations

To know what a graph is.  
To identify x and y axis.  
To identify what data is.

Simulation – A computer simulation is a program that models a real-life situation. They let you try things out that would be too difficult or dangerous to do in real life.

Graph – a diagram showing the value of objects.  
Field – a part of a record.  
Data – facts and statistics collected together for reference  
Bar chart – a graph in which the numerical amounts are shown by the height or length of lines or rectangles of equal width.  
Block graph – a graph where a block represents one item.  
Line graph – a graph where a line is used to show an amount.



## Key Concepts

**Online Safety** – *Children know how to use technology safely and know the importance of personal information.*

**Coding programming** – *Children understand algorithms and how to detect and correct errors in order to de-bug.*

**Multimedia and processing** – *Children can recognise, develop and edit a range of media including text, image and video.*

**Communication and collaboration** – *Children understand that the internet can be used to communicate in a variety of different ways.*

Year 4

## **ONLINE SAFETY**

**GOOGLE Sharp, Alert, Secure, Kind Brave (Be Internet Legends)**

1. To use technology safely, respectfully and responsibly
2. To recognise acceptable/unacceptable behaviour
3. To identify a range of ways to report concerns about content and contact.
4. To understand that the Internet contains fact, fiction and opinions and begin to distinguish between them
5. To understand what personal information should be kept private.
6. To know that passwords keep information secure and that they should be kept private

**Think Critically** and evaluate online sources.

**Protect themselves** from online threats, including bullies and scams.

**Be sharp about sharing** what, when, and with whom.

**Be kind and respectful** towards other people and their privacy.

**Ask for help** from a parent or another trust adult with tricky situations.

Think before you share

Check it's for real

Protect your stuff.

Respect Each Other

When in Doubt, Discuss.

Online, safety, personal information, think you know, passwords, information, location, chatroom, stranger, cyber bullying, online platform, reporting, terms and conditions,

## **Programming**

1. To design, write and debug programs
2. To use sequence, selection, and repetition in programs
3. To know how to detect and correct errors in algorithms and programs

**Coding- Purple Mash**

**Children understand what a variable is in programming**

**Children can explain what a variable is when used in programming.**

**Children can explain how they made their program change the number every second.**

Action - Types of commands, which are run on an object. They could be used to move an object or change a property.

Alert - This is a type of output. It shows a pop-up of text on the screen.

Algorithm - a precise step by step set of instructions used to solve a problem or achieve an objective.

To review coding language.  
 To use a sketch or storyboard to represent a program design and algorithm.

- To use the design to create a program.

To introduce the If/else statement and use it in a program.

- To create a variable.
- To explore a flowchart design for a program with an if/else statement
- To create a program which responds to the If/else command, using the value of the variable.

To create a program with a character that repeats actions.

- To use the Repeat Until command to make characters repeat actions.
- To program a character to respond to user keyboard input.

To make timers and counting machines using variables to print a new number to the screen every second

To explore how 2Code can be used to investigate control by creating a simulation.

To use selection in coding with the 'if/else' command.  
 To understand and use variables in 2Code.  
 To use flowcharts for design of algorithms including selection.  
 To use the 'repeat until' with variables to determine the repeat.  
 To learn about and use computational thinking terms decomposition and abstraction.

Flowchart Bug - A problem in a computer program that stops it working the way it was designed.  
 Code Design – Design what a program will look like and what it will do.  
 Command - A single instruction in a computer program.  
 Control - These commands determine whether parts of the program will run, how often and sometimes, when.  
 Debug/Debugging - Looking for any problems in the code, fixing and testing them.  
 Design Mode - Used to create the look of a 2Code computer program when it is run.  
 Event – Something that causes a block of code to be run.  
 Get Input - This puts the text that a user types into the computer's temporary memory to be used to control the program flow.  
 If - A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run  
 If/Else - A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.  
 Input - Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.  
 Output - Information that comes out of the computer e.g. sound.

## Communication and collaboration

1. To understand computer networks including the internet
2. To begin to explore how the internet can provide multiple services including communication

## Multimedia and processing

1. To know how to import, and edit content
2. To hold two hands over different halves of the keyboard
3. To use more than two fingers to enter text
4. To know how to import an image and explore effects.
5. To begin using technology to input data (e.g. excel)

**To know what a spreadsheet is.**  
**To understand what cells are.**  
**To know the difference between a database and spreadsheet.**

**Object** - An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects. **Repeat** - This command can be used to make a block of commands run a set number of times or forever.

**Selection** - This is a conditional/decision command. When selection is used, a program will choose a different outcome depending on a condition.

**Simulation** - A model that represents a real or imaginary situation. **Timer** - Use this command to run a block of commands after a timed delay or at regular intervals.

**Variable** – A named area in computer memory. A variable has a name and a value. The program can change this variable value.

**Average** – Symbols used to represent comparing two values

**Advance mode** – A mode of 2Calculate in which the cells have references and can include formulae.

**Copy and Paste** – A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.

**Columns** – Vertical reference points for the cells in a spreadsheet.

**Cells** – An individual section of a spreadsheet grid. It contains data or calculations.

## Spreadsheets

Formatting cells as currency, percentage, decimal to different decimal places or fraction.

Using the formula wizard to calculate averages.

Combining tools to make spreadsheet activities such as timed times tables tests.

Using a spreadsheet to model a real-life situation.

To add a formula to a cell to automatically make a calculation in that cell.

Charts – Use this button to create a variety of graph types for the data in the spreadsheet.

Equals tool – tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Formula – Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet

Formula Wizard – The wizard guides you in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells.

Move cell tool – This tool makes a cell's contents moveable by drag-and-drop methods.

Random tool – Click to give a random value between 0 and 9 to the cell.

Rows - Vertical reference points for the cells in a spreadsheet.

Spin Tool – Adds or subtracts 1 from the value of the cell to its right.

Spreadsheet - A computer program that represents information in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells.

Timer – When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again.

## Writing for different audiences

To explore how font size and style can affect the impact of a text.

To use a simulated scenario to produce a news report.

To use a simulated scenario to write for a community campaign.

## Logo

To input simple instructions in Logo.

Using 2Logo to create letter shapes.

To use the Repeat function in Logo to create shapes.

To use and build procedures in Logo.

**To know the genre or writing.**

**To understand who the audience may be.**

To think about the audience when creating animations, images or films

**To learn the structure of the coding language of Logo.**

**Children know what the common instructions are in Logo and how to type them.**

**Children understand the pu and pd commands.**

Font – the style of writing one can use when typing on a document.

Bold – to make the text stand out

Italic – a style of formatting when the text is at an angle.

Underline – to draw a line underneath the font.

LOGO – a text-based coding language used to control an onscreen turtle to create mathematical patterns.

BK – move backwards a distance of units.

FD – move forward a distance of units.

RT – turn right a given number of degrees.

LT – turn left a given number of degrees.

REPEAT – repeat a set of instructions a specified number of times.

SETPC – set pen colour to a given colour.

SETPS – set the pen thickness.

PU – lift the pen up off the screen.

PD – put the pen back down on the screen.

## Animation

- To add backgrounds and sounds to animations.
- To be introduced to 'stop motion' animation.
- To share animation on the class display board and by blogging.

## Effective Search

- To locate information on the search results page.
- To use search effectively to find out information.
- To assess whether an information source is true and reliable.

To discuss what makes a good animated film or cartoon.

To learn how animations are created by hand.

To find out how 2Animate can be created in a similar way using the computer.

To learn about onion skinning in animation.

To know how to search on the internet.

Animation – A process by which still pictures appear to move.

Flipbook – A book with pictures drawn in a way that makes them appear to move when the pages are flicked.

Frame – A single image in an animation.

Onion skinning – A process where the shadow image of the previous frame is present to help you line up the objects of the animation correctly.

Background – A non-moving image that appears behind the animated images.

Play – Press this button to make the animation start.

Sound – Music or oral effects that can be added to the animation.

Stop motion – A technique whereby the camera is repeatedly stopped and started, for example to give animated figures the impression of movement.

Video clip – A short piece of film or animation.



## Hardware Investigators.

- Children can name the different parts of a desktop computer. • Children know what the function of the different parts of a computer is.
- Children have created a leaflet to show the function of computer skills

**To understand the different parts that make up a computer.**

**To recall the different parts that make up a computer.**

Easter egg – An unexpected or undocumented feature in a piece of computer software or on a DVD, included as a joke or a bonus.

Internet – A global computer network providing a variety of information and communication facilities.

Internet browser – A software application used to locate and display Web pages.

Search – To look for information. In this case on the Internet.

Search engine – A program that searches for and identifies items in a database. Used especially for finding sites on the World Wide Web.

Spoof website – Website spoofing is the act of creating a website, as a hoax, with the intention of misleading readers that the website has been created by a different person or organisation.

Website – A set of related web pages located under a single domain name.

Motherboard – a printed circuit board containing the main parts of a computer or other device, with connectors for other circuit boards to be slotted into.

CPU – the part of a computer in which operations are controlled.

RAM –allows programs to store information to help the computer run more quickly.

Graphics card – a printed circuit board that controls the output to a display screen.

			<p>Network card – an electronic device that connects a computer to a computer network.</p> <p>Monitor– a screen which displays an image generated by a computer.</p> <p>Speakers – a device for letting you hear sounds generated by the computer.</p> <p>Keyboard and mouse – external devices</p>
--	--	--	---

## Key Concepts

**Online Safety – Children know how to use technology safely; know the importance of personal information and how to report inappropriate behaviour and content effectively.**

**Coding programming – Children can apply knowledge of coding and programming to write, de-bug and evaluate algorithms.**

**Multimedia and processing – With growing confidence, children can input data and change variables to solve problems.**

**Communication and collaboration – Children understand how the internet can aid communication, including internal and external networks, and know strategies to check the information they receive via the internet.**

## Online Safety

THINK YOU KNOW 7-11 Scheme

1. To use technology safely, respectfully and responsibly
2. To recognise acceptable/unacceptable behaviour
3. To identify a range of ways to report concerns about content and contact.
4. To understand that the Internet contains fact, fiction and opinions and begin to distinguish between them
5. To understand what personal information should be kept private.
6. To know that passwords keep information secure and that they should be kept private

To gain a greater understanding of the impact that sharing digital content can have.

To review sources of support when using technology and children's responsibility to one another in their online behaviour.

To know how to maintain secure passwords.

To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this.

To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online.

To learn about how to reference sources in their work

To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information.

Online safety – Refers to staying safe when having a presence online.

Smart rules – A set of rules based around the word SMART designed to help you stay safe when online.

Password – A string of characters that allows access to a computer system or service.

Reputable – Having a good reputation.

Encryption – The process of converting information or data into a code, especially to prevent unauthorized access.

Identity theft – The practice of using another person's name and personal information in order to obtain credit, loans, etc.

Shared image – A picture that is shared online for other people to see.

Plagiarism – The practice of taking someone else's work or ideas and passing them off as one's own.

Citations – A quotation from or reference to a book, paper, or author, especially in an academic work

Reference – A mention of a source of information in a book or article including online.

Bibliography – A list of all the books and articles used in a piece of work.

## Programming

1. To design, write and debug programs
2. To use sequence, selection, and repetition in programs
3. To know how to detect and correct errors in algorithms and programs
4. To begin to evaluate effectiveness and debug if required

### Coding Purple Mash

To represent a program design and algorithm.

To create a program that simulates a physical system using decomposition.

To explore string and text variable types so that the most appropriate can be used in programs.

To use the Launch command in 2Code Gorilla

To program a playable game with timers and scorepad.

## Multimedia and processing

1. To cut and paste between applications.
2. To delete/insert and replace text to improve clarity and mood using a variety of editing materials including spell check
3. To develop confidence using both hands when typing
4. To use different filming techniques
5. To know how to input data, changing variables to solve problems

## Spreadsheets

Using the formula wizard to add a formula to a cell to automatically make a calculation in that cell.

To review coding vocabulary.

Action - Types of commands, which are run on an object. They could be used to move an object or change a property.

Alert - This is a type of output. It shows a pop-up of text on the screen.

Algorithm - a precise step by step set of instructions used to solve a problem or achieve an objective.

Bug - A problem in a computer program that stops it working the way it was designed.

Code Design – Design what a program will look like and what it will do.

Command - A single instruction in a computer program.

Control - These commands determine whether parts of the program will run, how often and sometimes, when.

Debug/Debugging - Looking for any problems in the code, fixing and testing them.

Design Mode - Used to create the look of a 2Code computer program when it is run.

Event – Something that causes a block of code to be run.

Get Input - This puts the text that a user types into the computer's temporary memory to be used to control the program flow.

If - A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run.

If/Else - A conditional command. This tests a statement. If the condition is true, then the commands inside the 'if block' will be run. If the condition is not met, then

To copy and paste within 2Calculate.  
Using 2Calculate tools to test a hypothesis.  
To add a formula to a cell to automatically make a calculation in that cell.  
Using a spreadsheet to model a real-life situation and answer questions

## Programming

1. To design, write and debug programs
2. To use sequence, selection, and repetition in programs
3. To know how to detect and correct errors in algorithms and programs
4. To begin to evaluate effectiveness and debug if required

## Databases

To learn how to search for information in a database.  
To contribute to a class database.  
To create a database around a chosen topic.

the commands inside the 'else block' are run. Input - Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.

Output - Information that comes out of the computer e.g. sound.

Object - An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects.

Repeat - This command can be used to make a block of commands run a set number of times or forever.

Sequence - This is when a computer program runs commands in order. In 2Code this can also include "repeat" or a timer.

Selection - This is a conditional/decision command. When selection is used, a program will choose a different outcome depending on a condition.

Simulation - A model that represents a real or imaginary situation.

Timer - Use this command to run a block of commands after a timed delay or at regular intervals.

Variable – A named area in computer memory. A variable has a name and a value. The program can change this variable value.

## Game Creator

- To set the scene.
- To create the game environment.
- To create the game quest.
- To finish and share the game.
- To evaluate their and peers' games.

## 3D Modelling

- To be introduced to Design and Make and the skills of computer aided design.
- To explore the effect of moving points when designing.
- To understand designing for a purpose.
- To understand printing and making.

Average – Symbols used to represent comparing two values

Advance mode – A mode of Calculate in which the cells have references and can include formulae.

Copy and Paste – A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.

Columns – Vertical reference points for the cells in a spreadsheet.

Cells – An individual section of a spreadsheet grid. It contains data or calculations.

Charts – Use this button to create a variety of graph types for the data in the spreadsheet.

Equals tool – tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Formula – Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet.

Formula Wizard – The wizard guides you in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells.

Move cell tool – This tool makes a cell's contents moveable by drag-and-drop methods.

Random tool – Click to give a random value between 0 and 9 to the cell.

## Communication and collaboration

1. To understand computer networks including the internet and begin understanding internal networks
2. To begin to explore how the internet can provide multiple services including communication
3. To begin to use strategies to check information retrieved from the internet or via online communication

### Concept Maps.

To understand the need for visual representation when generating and discussing complex ideas.

To understand and use the correct vocabulary when creating a concept map.

To create a concept map.

To understand how a concept map can be used to retell stories and present information.

To create a collaborative concept map and present this to an audience.

Rows - Vertical reference points for the cells in a spreadsheet.

Spin Tool – Adds or subtracts 1 from the value of the cell to its right.

Spreadsheet - A computer program that represents information in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells.

Timer – When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again.

Key

Avatar – An icon or figure representing a person in a video game, Internet forum, etc.  
Binary tree (branching database) – A way to sort information by dividing the information into groups based upon questions with yes or no answers.

Charts – Representing information in a pictorial form.

Collaborative – Produced by, or involving, two or more parties working together.

Data –Facts and statistics collected together for information.

Database – A set of data that can be held in a computer in a format that can be searched and sorted for information.

Find - Search for information in a database.

Record – A collection of data about one item entered into a database.



Sort, Group and Arrange – Different ways to sort information in a database so it is easy to read, understand and interpret.

Statistics and reports – To produce information about data in a database.

Table – Sorting information into rows and columns.

Animation – Creating an illusion of movement.

Computer game – A game played using a computer, typically a video game.

Customise – Modify (something) to suit an individual or task.

Evaluation – The making of a judgement about the value of something.

Image – In this case, a picture displayed on the computer screen.

Instructions – Detailed information about how something should be done or operated.

Interactive – Responding to a user's input on a computer or device.

Screenshot – An image of the data displayed on the screen of a computer or mobile device.

Texture – High frequency detail or colour information on a computer-generated graphic.





Perspective – Representing three-dimensional objects on a two-dimensional surface to give the right impression of their height, width, depth, and position in relation to each other.

Playability – A measure of either the ease by which a video game may be played, or of the overall quality of its gameplay

CAD – Computer aided Design – A CAD computer program or app allows you to design a 3D object or environment in 2D and visualise it in 3D on the screen from many angles.

Modelling - The activity of making models.

3D – Something that has three dimensions; height, width and depth.

Viewpoint - A person's opinion or point of view.

Polygon - An object with at least three straight sides and angles, and typically five or more.

2D – Something that has only two dimensions; height and width.

Net - A pattern that you can cut and fold to make a model of a solid shape.

3D Printing - The action or process of making a physical object from a three dimensional digital model, typically by laying down many thin layers of a material in succession.



Points - An exact position or location on a 2D surface.

Template - Something that serves as a model for others to copy.

Audience - People giving attention to something.

Collaboratively - Something that is produced by, or involves, two or more parties working together.

Concept – An idea.

Concept Map - A tool for organising and representing knowledge. They form a web of ideas which are all interconnected.

Connection - A relationship or link between two nodes or ideas.

Idea - An opinion or belief.

Node – A way to represent concepts or ideas.

Thought - An idea or opinion produced by thinking or occurring suddenly in the mind.

Visual - A picture, piece of film or display used to illustrate or accompany something.

## Key Concepts

**Online Safety** – *Children know how to use technology safely; know the importance of personal information and how to report inappropriate behaviour and content effectively.*

**Coding programming** – *Children can apply knowledge of coding and programming to write, de-bug and evaluate algorithms.*

**Multimedia and processing** – *With growing confidence, children can input data and change variables to solve problems.*

**Communication and collaboration** – *Children understand how the internet can aid communication, including internal and external networks, and know strategies to check the information they receive via the internet.*

Year 6

## Online Safety

1. To use technology safely, respectfully and responsibly
2. To recognise acceptable/unacceptable behaviour
3. To identify a range of ways to report concerns about content and contact.
4. To understand that the Internet contains fact, fiction and opinions and begin to distinguish between them
5. To understand what personal information should be kept private.
6. To know that passwords keep information secure and that they should be kept private

Identify benefits and risks of mobile devices broadcasting the location of the user/device.  
Identify secure sites by looking for privacy seals of approval.  
Identify the benefits and risks of giving personal information.  
To review the meaning of a digital footprint.  
To have a clear idea of appropriate online behaviour.  
To begin to understand how information online can persist.  
To understand the importance of balancing game and screen time with other parts of their lives.  
Identify the positive and negative influences of technology on health and the environment.

Online, safety, personal information, think you know, passwords, information, location, chatroom, stranger, cyber bullying, online platform, reporting, terms and conditions,

Digital footprint – The information about a person that exists on the Internet as a result of their online activity.

Password - A string of characters that allow access to a computer system or service.

PEGI rating – A rating that shows what age a game is suitable for.

Phishing – The practice of sending email pretending to be from reputable companies in order to persuade individuals to reveal personal information, such as passwords and credit cards numbers

Screen time - Time spent using a device such as a computer, television, or games console.

Spoof website – A website that uses dishonest design to trick users into thinking that it represents the truth.

	<p><b>Programming</b></p> <ol style="list-style-type: none"> <li>1. To design, write and debug programs</li> <li>2. To use sequence, selection, and repetition in programs</li> <li>3. To know how to detect and correct errors in algorithms and programs</li> <li>4. To evaluate effectiveness and debug if required</li> </ol>	<p><b>To use the program design process, including flowcharts, to develop algorithms for more complex programs using and understanding of abstraction and decomposition to define the important aspects of the program.</b></p> <p><b>To code, test and debug from these designs.</b></p> <p><b>To use functions and tabs in 2Code to improve the quality of the code</b></p>	<p>Action - Types of commands, which are run on an object. They could be used to move an object or change a property.</p> <p>Alert - This is a type of output. It shows a pop-up of text on the screen.</p> <p>Algorithm - a precise step by step set of instructions used to solve a problem or achieve an objective.</p> <p>Bug - A problem in a computer program that stops it working the way it was designed.</p> <p>Code Design – Design what a program will look like and what it will do.</p> <p>Command - A single instruction in a computer program.</p> <p>Control - These commands determine whether parts of the program will run, how often and sometimes, when.</p> <p>Debug/Debugging - Looking for any problems in the code, fixing and testing them.</p> <p>Design Mode - Used to create the look of a 2Code computer program when it is run.</p> <p>Event – Something that causes a block of code to be run.</p> <p>Get Input - This puts the text that a user types into the computer’s temporary memory to be used to control the program flow.</p> <p>If - A conditional command. This tests a statement. If the condition is true, then the commands inside the block will be run.</p> <p>If/Else - A conditional command. This tests a statement. If the condition is true, then the</p>

			<p>commands inside the 'if block' will be run. If the condition is not met, then the commands inside the 'else block' are run.</p> <p>Input - Information going into the computer. Can include moving or clicking the mouse, using the keyboard, swiping and tilting the device.</p> <p>Output - Information that comes out of the computer e.g. sound.</p> <p>Object - An element in a computer program that can be changed using actions or properties. In 2Code, buttons, characters and vehicles are types of objects.</p> <p>Repeat - This command can be used to make a block of commands run a set number of times or forever.</p> <p>Sequence - This is when a computer program runs commands in order. In 2Code this can also include "repeat" or a timer.</p> <p>Selection - This is a conditional/decision command. When selection is used, a program will choose a different outcome depending on a condition.</p> <p>Simulation - A model that represents a real or imaginary situation.</p> <p>Timer - Use this command to run a block of commands after a timed delay or at regular intervals.</p> <p>Variable – A named area in computer memory. A variable has a name and a value. The program can change this variable value.</p>
			<p>Average – Symbols used to represent comparing two values</p>

## Multimedia and processing

1. To have confidence using both hands when typing
2. To be able to use various display features to communicate to an audience, editing text to suit the given audience.
3. To delete/insert and replace text to improve clarity and mood using a variety of editing materials including spell check
4. To know how to film, create, edit and refine to ensure quality to present to an audience
5. To know how to input/edit/replace data, changing variables to solve problems

### Spreadsheets.

To use a spreadsheet to investigate the probability of the results of throwing many dice.

Using the formula wizard to add a formula to a cell to automatically make a calculation in that cell.

To create graphs showing the data collected.

To type in a formula for a cell to automatically make a calculation in that cell.

Using a spreadsheet to create computational models and answer questions.

Advance mode – A mode of 2Calculate in which the cells have references and can include formulae.

Copy and Paste – A way to copy information from the screen into the computer's memory and paste it elsewhere without re-typing.

Columns – Vertical reference points for the cells in a spreadsheet.

Cells – An individual section of a spreadsheet grid. It contains data or calculations.

Charts – Use this button to create a variety of graph types for the data in the spreadsheet.

Count (how many) tool – Counts the number of whatever value object is in the cell to its immediate left and puts the answer in the cell to its immediate right.

Dice – When clicked, this will simulate a dice roll by switching to one of the faces of a die.

Equals tool – tests whether the entered calculation in the cells to the left of the tool has the correct answer in the cell to the right of the tool.

Formula – Use the formula wizard or type into the formula bar to create a formula in a cell, this will calculate the value for the cells based upon the value of other cells in the spreadsheet.

Formula Wizard – The wizard guides you in creating a variety of formulae for a cell such as calculations, totals, averages, minimum and maximum for the selected cells.

			<p>Move cell tool – This tool makes a cell’s contents moveable by drag-anddrop methods.</p> <p>Random tool – Click to give a random value between 0 and 9 to the cell.</p> <p>Rows - Vertical reference points for the cells in a spreadsheet.</p> <p>Spin Tool – Adds or subtracts 1 from the value of the cell to its right.</p> <p>Spreadsheet - A computer program that represents information in a grid of rows and columns. Any cell in the grid may contain either data or a formula that describes the value to be inserted based on the values in other cells.</p> <p>Timer – When placed in the spreadsheet, click the timer to adds 1 to the value of the cell to its right every second until it is clicked again.</p>
	<p><b>Communication and collaboration</b></p> <ol style="list-style-type: none"> <li>1. To understand computer networks including the internet and internal networks</li> <li>2. To begin to explore how the internet can provide multiple services including communication</li> <li>3. To know strategies to check information retrieved from the internet or via online communication, using their own judgement to aid validity</li> </ol> <p><b><u>Blogging</u></b></p> <p>To identify the purpose of writing a blog and its key features.</p>	<p>To understand the importance of regularly updating the content of a blog.</p> <p>To understand how to contribute to an existing blog.</p> <p>To understand how and why blog posts are approved by the teacher.</p>	<p>Audience – In this case the readership of the blog.</p> <p>Blog - A regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.</p> <p>Blog page – A webpage onto which blog posts are hosted.</p> <p>Blog post - A piece of writing or other item of content published on a blog.</p> <p>Collaborative - Produced by or involving two or more parties working together.</p> <p>Icon - A symbol or graphic representation on a screen.</p>

	<p>To plan the theme and content for a blog and write the content. To consider the effect upon the audience of changing the visual properties of the blog.</p>		
	<p><b><u>Text Adventures</u></b> To plan a story adventure. To make a story-based adventure. To introduce map-based text adventures. To code a map-based text adventure.</p>	<p>To find out what a text adventure is.</p>	<p>Text-based adventure - A computer game that uses text instead of graphics. Concept map - A tool for organising and representing knowledge. They form a web of ideas which are all interconnected. Debug - Identify and remove errors from (computer hardware or software). Sprite - A computer graphic which may be moved on-screen. Function – In this context, a section of code that gets run when it is called from the main code. A function in a program is usually a piece of code that gets run lots of times</p>
	<p><b><u>Networks</u></b> To research and find out about the age of the Internet. To think about what the future might hold</p>	<p>To learn about what the Internet consists of. To find out what a LAN and a WAN are. To find out how the Internet is accessed in school.</p>	<p>Internet - A global computer network providing a variety of information and communication facilities consisting of interconnected networks using standardized communication protocols. World Wide Web - An information system on the Internet which allows documents to be connected to other documents by hypertext links, enabling the user to search for information by moving from one document to another. Network - Several interconnected computers, machines, or operations. Local area network (LAN)- A computer network that links devices within a building or group of adjacent buildings, especially one with a radius of less than 1 km.</p>



			<p>Wide area network (WAN) - A computer network in which the computers connected may be far apart, generally having a radius of more than 1 km.</p> <p>Router - A device which forwards data packets to the appropriate parts of a computer network.</p> <p>Network cables - Used to connect and transfer data and information between computers and routers.</p> <p>Wireless – The ability to transmit data from one device to another without using wires.</p>
	<p style="text-align: center;"><b><u>Quizzing</u></b></p> <p>To create a picture-based quiz for young children.          To learn how to use the question types within 2Quiz.          To explore the grammar quizzes.          To make a quiz that requires the player to search a database.</p>		<p>Audience - the people giving attention to something.</p> <p>Collaboration - the action of working with someone to produce something.</p> <p>Concept map - a tool for organising and representing knowledge. They form a web of ideas which are all interconnected.</p> <p>Database - a structured set of data held in a computer, especially one that is accessible in various ways.</p> <p>Quiz - a test of knowledge, especially as a competition between individuals or teams as a form of entertainment.</p>