



Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
Pupils should be taught to: - understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions; - create and debug simple programs; - use logical reasoning to predict the behaviour of simple programs; - use technology purposefully to create, organise, store, manipulate and retrieve digital content; - recognise common uses of information technology beyond school; - use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	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 <u>opportunities they offer for communication and collaboration</u>; - 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.

At Thomas Harding Junior School computing is split into 5 different categories: **E-Safety**, **Programming**, **Multimedia**, **Technology in Our Lives** and **Data Handling**. Below is the progression of skills that children should learn from Year 3 until they leave in Year 6.

	E Safety			
Unit	Year 3	Year 4	Year 5	Year 6
Media Balance & Well-Being	Recognise the ways in which digital devices can be distracting. Identify how they feel when others are distracted by their devices. Identify ideal device-free moments for themselves and others	Examine both online and in-person responsibilities. Describe the "Rings of Responsibility" as a way to think about how our behaviour affects ourselves and others. Identify examples of online responsibilities to others.	Learn the "What? When? How Much?" framework for describing their media choices. Use this framework and their emotional responses to evaluate how healthy different types of media choices are. Begin to develop their own definition of a healthy media balance.	Reflect on how balanced they are in their daily lives. Consider what "media balance" means and how it applies to them. Create a personalised plan for healthy and balanced media use.
Privacy & Security	Recognise the kind of information that is private. Understand that they should never give out private information online.	Define the term "password" and describe its purpose. Understand why a strong password is important. Practise creating a memorable and strong password.	Identify the reasons why people share information about themselves online. Explain the difference between private and personal information. Explain why it is risky to share private information online.	Define "the curiosity gap". Explain how clickbait uses the curiosity gap to get your attention. Use strategies for avoiding clickbait.
Digital Footprint & Identity	Learn that the information they share online leaves a digital footprint or "trail".	Consider how posting selfies or other images will lead others to make assumptions about them.	Define the term "digital footprint" and identify the online activities that contribute to it.	Define "gender stereotypes" and describe how they can be present online.

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	Explore what information is OK to be shared online.	Reflect on the most important parts of their unique identities. Identify ways they can post online to best reflect who they are.	Identify ways they are -- and are not -- in control of their digital footprint. Understand what responsibilities they have for the digital footprints of themselves and others.	Describe how gender stereotypes can lead to unfairness or bias. Create an avatar and a poem that show how gender stereotypes impact who they are.
Relationships & Communication	Compare and contrast how they are connected to different people and places, in person and on the internet. Demonstrate an understanding of how people can connect on the internet.	Define what a community is, both in person and online. Explain how having norms helps people in a community achieve their goals. Create and pledge to adhere to shared norms for being in an online community.	Define "social interaction" and give an example. Describe the positives and negatives of social interaction in online games. Create an online video game cover that includes guidelines for positive social interaction.	Compare and contrast different kinds of online-only friendships. Describe the benefits and risks of online-only friendships. Describe how to respond to an online-only friend if the friend asks something that makes them feel uncomfortable.
Cyberbullying, Digital Drama & Hate Speech	Understand what online meanness can look like and how it can make people feel. Identify ways to respond to mean words online, using "S-T-O-P".	Understand that it's important to think about the words we use, because everyone interprets things differently. Identify ways to respond to mean words online, using S-T-O-P.	Reflect on the characteristics that make someone an upstanding digital citizen. Recognise what cyberbullying is.	Recognise similarities and differences between in-person bullying, cyberbullying and being mean. Empathise with the targets of cyberbullying.

		Decide what kinds of statements are OK to say online and which are not.	Show ways to be an upstander by creating a digital citizenship superhero comic strip.	Identify strategies for dealing with cyberbullying and ways they can be an upstander for those being bullied.
News & Media Literacy	Explain how giving credit is a sign of respect for people's work. Learn how to give credit in their schoolwork for content they use from the internet.	I know that not all information on the internet is real. I can evaluate the content. I can be discerning about what I read. Recognise that photos and videos can be altered digitally. Identify different reasons why someone might alter a photo or video. Analyse altered photos and videos to try to determine why.	Define "copyright" and explain how it applies to creative work. Describe their rights and responsibilities as creators. Apply copyright principles to real-life scenarios.	Understand the purposes of different parts of an online news page. Identify the parts and structure of an online news article. Learn about things to watch out for when reading online news pages, such as sponsored content and advertisements.

Data Handling			
Year 3	Year 4	Year 5	Year 6
Data Logging	Branching Database	Flat-file database	Spreadsheets
I can choose a data set to answer a given question I can suggest questions that can be answered using a given data set I can identify data that can be gathered over time	I can select an attribute to separate objects into groups I can create a group of objects within an existing group I can arrange objects into a tree structure	I can navigate a flat-file database to compare different views of information I can explain what a field and a record is in a database I can choose which field to sort data by to answer a given question	I can explain the relevance of data headings I can answer questions from an existing data set I can ask simple relevant questions which can be answered using data
I can explain that sensors are input devices I can use data from a sensor to answer a given question I can identify that data from sensors can be recorded	I can select objects to arrange in a branching database I can group objects using my own yes/no questions I can prove my branching database works	I can explain how information can be grouped I can group information to answer questions I can combine grouping and sorting to answer more specific questions	I can explain what an item of data is I can apply an appropriate number format to a cell I can build a data set in a spreadsheet application
I can identify a suitable place to collect data I can identify the intervals used to collect data I can talk about the data that I have captured	I can explain that questions need to be ordered carefully to split objects into similarly sized groups I can compare two branching database structures	I can choose which field and value are required to answer a given question I can outline how 'AND' and 'OR' can be used to refine data selection I can choose multiple criteria to answer a given question	I can explain the relevance of a cell's data type I can construct a formula in a spreadsheet I can identify that changing inputs changes outputs

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I can import a data set I can use a computer to view data in different ways I can use a computer program to sort data	I can select a theme and choose a variety of objects I can create questions and apply them to a tree structure I can use my branching database to answer questions	I can select an appropriate chart to visually compare data I can refine a chart by selecting a particular filter I can explain the benefits of using a computer to create graphs	I can recognise that data can be calculated using different operations I can create a formula which includes a range of cells I can apply a formula to multiple cells by duplicating it
I can propose a question that can be answered using logged data I can plan how to collect data using a data logger I can use a data logger to collect data		I can ask questions that will need more than one field to answer I can refine a search in a real-world context I can present my findings to a group	I can use a spreadsheet to answer questions I can explain why data should be organised I can apply a formula to calculate the data I need to answer questions
I can interpret data that has been collected using a data logger I can draw conclusions from the data that I have collected I can explain the benefits of using a data logger			I can produce a graph I can use a graph to show the answer to questions I can suggest when to use a table or graph

Programming			
Year 3	Year 4	Year 5	Year 6
I can identify the objects in a Scratch project (sprites, backdrops) I can explain that objects in Scratch have attributes (linked to) I can recognise that commands in Scratch are represented as blocks	I can list an everyday task as a set of instructions including repetition I can predict the outcome of a snippet of code I can modify a snippet of code to create a given outcome	I can recall how conditions are used in selection I can identify conditions in a program I can modify a condition in a program	I can identify examples of information that is variable I can explain that the way that a variable changes can be defined I can identify that variables can hold numbers or letters
I can identify that each sprite is controlled by the commands I choose I can choose a word which describes an on-screen action for my plan I can create a program following a design	I can modify loops to produce a given outcome I can choose when to use a count-controlled and an infinite loop I can recognise that some programming languages enable more than one process to be run at once	I can use selection in an infinite loop to check a condition I can identify the condition and outcomes in an 'if..then... else...' statement I can create a program with different outcomes using selection	I can identify a program variable as a placeholder in memory for a single value I can explain that a variable has a name and a value I can recognise that the value of a variable can be changed
I can start a program in different ways I can create a sequence of connected commands I can explain that the objects in my project will respond exactly to the code	I can choose which action will be repeated for each object I can explain what the outcome of the repeated action should be I can evaluate the effectiveness of the repeated	I can explain that program flow can branch according to a condition I can design the flow of a program which contains 'if... then... else...'	I can decide where in a program to change a variable I can make use of an event in a program to set a variable I can recognise that the value of a variable can be used by a program

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	sequences used in my program	I can show that a condition can direct program flow in one of two ways	
I can explain what a sequence is I can combine sound commands I can order notes into a sequence	I can identify which parts of a loop can be changed I can explain the effect of my changes I can re-use existing code snippets on new sprites	I can outline a given task I can use a design format to outline my project I can identify the outcome of user input in an algorithm	I can choose the artwork for my project I can explain my design choices I can create algorithms for my project
I can build a sequence of commands I can decide the actions for each sprite in a program I can make design choices for my artwork	I can evaluate the use of repetition in a project I can select key parts of a given project to use in my own design I can develop my own design explaining what my project will do	I can implement my algorithm to create the first section of my program I can test my program I can share my program with others	I can create the artwork for my project I can choose a name that identifies the role of a variable I can test the code that I have written
I can identify and name the objects I will need for a project I can relate a task description to a design I can implement my algorithm as code	I can refine the algorithm in my design I can build a program that follows my design I can evaluate the steps I followed when building my project	I can identify ways the program could be improved	I can identify ways that my game could be improved I can extend my game further using more variables I can share my game with others

Technology in our lives			
Year 3	Year 4	Year 5	Year 6
Connecting Computers	The Internet	Sharing information	Internet communication
I can explain that digital devices accept inputs I can explain that digital devices produce outputs I can follow a process	I can describe the internet as a network of networks I can demonstrate how information is shared across the internet I can discuss why a network needs protecting	I can explain that systems are built using a number of parts I can describe that a computer system features inputs, processes, and outputs I can explain that computer systems communicate with other devices	I can complete a web search to find specific information I can refine my search I can compare results from different search engines
I can classify input and output devices I can describe a simple process I can design a digital device	I can describe networked devices and how they connect I can explain that the internet is used to provide many services I can recognise that the World Wide Web contains websites and web pages	I can identify tasks that are managed by computer systems I can identify the human elements of a computer system I can explain the benefits of a given computer system	I can explain why we need tools to find things online I can recognise the role of web crawlers in creating an index I can relate a search term to the search engine's index
I can recognise different connections I can explain how messages are passed through multiple connections	I can explain the types of media that can be shared on the WWW	I can recognise that data is transferred using agreed methods	I can explain that search results are ordered I can explain that a search engine follows rules to rank relevant pages

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I can discuss why we need a network switch	I can describe where websites are stored when uploaded to the WWW I can describe how to access websites on the WWW	I can explain that networked digital devices have unique addresses I can explain that data is transferred over networks in packets	I can suggest some of the criteria that a search engine checks to decide on the order of results
I can recognise that a computer network is made up of a number of devices I can demonstrate how information can be passed between devices I can explain the role of a switch, server, and wireless access point in a network	I can explain what media can be found on websites I can recognise that I can add content to the WWW I can explain that internet services can be used to create content online	I can recognise that connected digital devices can allow us to access shared files stored online I can send information over the internet in different ways I can explain that the internet allows different media to be shared	I can describe some of the ways that search results can be influenced I can recognise some of the limitations of search engines I can explain how search engines make money
I can identify how devices in a network are connected together I can identify networked devices around me I can identify the benefits of computer networks	I can explain that websites and their content are created by people I can suggest who owns the content on websites I can explain that there are rules to protect content	I can suggest strategies to ensure successful group work I can make thoughtful suggestions on my group's work I can compare working online with working offline	I can explain the different ways in which people communicate I can identify that there are a variety of ways of communicating over the internet I can choose methods of communication to suit particular purposes
	I can explain that not everything on the World Wide Web is true		I can compare different methods of communicating on the internet

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	I can explain why some information I find online may not be honest, accurate, or legal I can explain why I need to think carefully before I share or reshare content		I can decide when I should and should not share I can explain that communication on the internet may not be private
Google Classroom Introduction			
I can login successfully I can navigate Google Classroom I can communicate on a platform respectfully.			

Multimedia			
Year 3	Year 4	Year 5	Year 6
Stop Motion Animation	Audio Editing	Video Editing	Web Page Creation
I can explain how an animation/flip book works	I can identify digital devices that can play audio, record sound, or do both I can identify important inputs and outputs of digital devices that can play audio, record sound, or do both	I can explain that video is a visual media format I can identify features of videos I can compare features in different videos	I can explore a website I can discuss the different types of media used on websites I know that websites are written in HTML

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	I can explain why I need to consider who owns audio and whether I have the right to reuse it		
I can break down a story into settings, characters, and events	I can use a device to record audio and play back sound	I can identify and find features on a digital video recording device	I can recognise the common features of a web page
I can describe an animation that is achievable on screen	I can suggest how to improve my recording	I can experiment with different camera angles	I can suggest media to include on my page
I can create a storyboard	I can discuss what other people include when recording sound for a podcast	I can recognise camera angles in a video	I can draw a web page layout that suits my purpose
I can use onion skinning to help me make small changes between frames	I can plan and write the content of a podcast	I can suggest filming techniques for a given purpose	I can say why I should use copyright-free images
I can review a sequence of frames to check my work	I can discuss why it is useful to be able to save digital recordings	I can capture video using a range of filming techniques	I can find copyright-free images
I can evaluate the quality of my animation	I can save a digital recording as a file	I can review how effective my video is	I can describe what is meant by the term 'fair use'
I can add other media to my animation	I can open a digital recording from a file	I can outline the scenes of my video	I can add content to my own web page
I can explain why I added other media to my animation	I can discuss ways in which audio recordings can be altered	I can decide which filming techniques I will use	I can preview what my web page looks like
	I can edit sections of an audio recording	I can create and save video content	I can evaluate what my web page looks like on different devices and suggest/make edits

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I can evaluate my final film	I can discuss sounds that other people combine I can choose suitable sounds to include in a podcast I can use editing tools to arrange sections of audio	I can store, retrieve, and export my recording to a computer I can explain how to improve a video by reshooting and editing I can select the correct tools to make edits to my video	I can explain what a navigation path is I can describe why navigation paths are useful I can make multiple web pages and link them using hyperlinks
	I can explain that digital recordings need to be exported to share them I can discuss the features of a digital recording I like I can suggest improvements to a digital recording	I can make edits to my video and improve the final outcome I can recognise that my choices when making a video will impact the quality of the final outcome I can evaluate my video and share my opinions	I can explain what a navigation path is I can describe why navigation paths are useful I can make multiple web pages and link them using hyperlinks
Multimedia – Microsoft Office	Photo Editing	Vector Drawing	3D Modelling
Navigate the basics of a tool bar change font style, size, and colours for a given purpose Copy and paste copy – right free images	I can explain the effect editing can have on an image I can use different tools to edit an image I can change the composition of an image by selecting parts of it	I can identify the shapes used to make a vector drawing I can explain that each element added to a vector drawing is an object I can move, resize, and rotate objects I have duplicated	I can plan my 3D model I can choose which 3D objects I need to construct my model I can modify multiple 3D objects

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	I can consider why someone might want to change the composition of an image		
Insert tables and shapes, improve fonts Change background designs Add transitions (and animations -MA) to PowerPoints Copy and paste copy – right free images choose the best locations for my content			